This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

3 3433 06906792 8

THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC.

FOR THE YEAR

1867.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF NAVIGATION,
WASHINGTON.
1865.

University Press:
Welch, Bigelow, and Company,
Cambridge.

PREFACE.

The preparation of the American Ephemeris and Nautical Almanac was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for the year 1865 several important changes were introduced. The Star Ephemeris was greatly enlarged, and the space given to Moon Culminations and Moon-Culminating Stars was greatly reduced. Mean Solar Time, instead of Sidereal Time, was used in the dates of the Ephemeris for the Meridian of Washington, and BESSEL'S notation in the formulas for star reductions was adopted instead of BAILY'S. Other changes of less importance, mentioned in the Explanation and Appendix, were made.

In the volume for 1867 the constants for facilitating the reduction of the Fixed Stars, p. 254, are given for every day, instead of for every fifth day. Tables for correcting A and B for small terms of nutation, and a list of occultations visible in the territory of the United States west of the Mississippi River, have been added to the Appendix.

JOSEPH WINLOCK,
Prof. Math. U. S. Navy, Superintendent.

September 7, 1865.

CONTENTS.

Page
Chronological Eras and Cycles vii
Symbols and Abbreviations viii

EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Page of the Month.
Ephemeris of the Sun . . . . I.
Ephemeris of the Moon . . . . IV.
Lunar Distances . . . . XIII.
Page
Ephemerides of the Planets, Venus — Saturn 218
Sun's Coördinates 242
Moon's Longitude 245

EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Obliquity of the Ecliptic, &c. 250
Fixed Stars :
    Logarithms for Correcting Places of 251
    Constants for facilitating the Reduction of 254
    Bessel's Formulas of Reduction 261
    Mean Places for 1866.0 262
    Apparent Places of Circumpolar Stars 266
    Apparent Places of Time Stars 291
Ephemeris of the Sun 328
Moon Culminations 334
Moon-Culminating Stars 337
Moon's Semidiameter and Horizontal Parallax 341
Moon's Phases 345
Moon's Equator 346
Ephemerides of the Planets, Mercury — Neptune 347
Horizontal Parallaxes and Semidiameters of the Planets 389
Sun's Coördinates 391
Heliocentric Coördinates of the Planets 403
Eclipses 411
Occultations 418
Jupiter's Satellites 460
Saturn's Ring, Discs of Venus and Mars 494
Phenomena, Planetary Constellations 495
Latitudes and Longitudes of Observatories 497
Use of the Tables 499

APPENDIX.

Construction of the Ephemerides 1
Moon's Libration 6
Table of Corrections for Second Differences in Moon's Motion 7
Table for converting Sidereal into Mean Solar Time, and the Reverse 8
Table giving Corrections for Seven Polar Stars 14
Tables giving corrections of *A* and *B* 15
Occultations visible West of the Mississippi River 17

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1867, WHICH COMPRISES THE LATTER PART OF THE 91ST AND THE BEGINNING OF THE 92D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

The year 6580 of the Julian Period;
" 7375 – 76 of the Byzantine era;
" 5627 – 28 of the Jewish era;
" 2620 since the foundation of Rome, according to Varro;
" 2614 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ;
" 2643 of the Olympiads, or the third year of the 661st Olympiad, commencing in July, 1865, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2179 of the Grecian era, or the era of the Seleucidæ;
" 1583 of the era of Diocletian.

The year 1284 of the Mohammedan era, or the era of the Hegira, begins on the 5th of May, 1867.

The first day of January of the year 1867 is the 2,402,968th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	F	Solar Cycle	28
Epact	25	Roman Indiction	10
Lunar Cycle or Golden Number	6	Julian Period	6580

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌	Conjunction, or having the same Longitude or Right Ascension.			
□	Quadrature, or differing 90° in	“	“	“
☍	Opposition, or differing 180° in	“	“	“

ABBREVIATIONS.

☊	Ascending Node.	′	Minutes of Arc.
☋	Descending Node.	″	Seconds of Arc.
N. North.	S. South.	^{h}	Hours.
E. East.	W. West.	^{m}	Minutes of Time.
°	Degrees.	^{s}	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	18 46 24.91	11.044	S.23 1 28.8	12.24	16 18.38	71.09	3 43.71	1.188
Wed.	2	18 50 49.89	11.031	22 56 20.9	13.39	16 18.38	71.04	4 12.05	1.174
Thur.	3	18 55 14.53	11.016	22 50 45.7	14.53	16 18.37	70.99	4 40.06	1.159
Fri.	4	18 59 38.80	10.999	22 44 43.3	15.66	16 18.36	70.94	5 7.70	1.143
Sat.	5	19 4 2.66	10.981	22 38 13.8	16.79	16 18.34	70.88	5 34.92	1.125
Sun.	6	19 8 26.08	10.962	22 31 17.3	17.90	16 18.32	70.82	6 1.71	1.106
Mon.	7	19 12 49.03	10.942	22 23 54.1	19.01	16 18.30	70.76	6 28.03	1.086
Tues.	8	19 17 11.46	10.921	22 16 4.5	20.10	16 18.27	70.69	6 53.83	1.064
Wed.	9	19 21 33.36	10.898	22 7 48.7	21.19	16 18.24	70.62	7 19.11	1.042
Thur.	10	19 25 54.71	10.874	21 59 6.8	22.26	16 18.20	70.54	7 43.84	1.018
Fri.	11	19 30 15.47	10.849	21 49 59.1	23.33	16 18.16	70.46	8 7.97	0.993
Sat.	12	19 34 35.63	10.823	21 40 26.2	24.38	16 18.11	70.38	8 31.50	0.967
Sun.	13	19 38 55.14	10.796	21 30 28.2	25.43	16 18.06	70.30	8 54.39	0.940
Mon.	14	19 43 13.98	10.768	21 20 5.2	26.46	16 18.00	70.21	9 16.62	0.912
Tues.	15	19 47 32.13	10.739	21 9 17.6	27.48	16 17.94	70.12	9 38.17	0.883
Wed.	16	19 51 49.59	10.710	20 58 5.7	28.49	16 17.87	70.02	9 59.02	0.854
Thur.	17	19 56 6.35	10.680	20 46 29.9	29.48	16 17.80	69.92	10 19.16	0.824
Fri.	18	20 0 22.38	10.650	20 34 30.5	30.46	16 17.72	69.82	10 38.58	0.794
Sat.	19	20 4 37.67	10.620	20 22 7.7	31.42	16 17.63	69.72	10 57.26	0.763
Sun.	20	20 8 52.22	10.589	20 9 21.8	32.37	16 17.54	69.62	11 15.20	0.732
Mon.	21	20 13 6.02	10.558	19 56 13.3	33.31	16 17.44	69.52	11 32.40	0.701
Tues.	22	20 17 19.06	10.526	19 42 42.4	34.23	16 17.33	69.41	11 48.84	0.669
Wed.	23	20 21 31.32	10.494	19 28 49.6	35.14	16 17.22	69.30	12 4.51	0.637
Thur.	24	20 25 42.80	10.461	19 14 35.2	36.03	16 17.10	69.19	12 19.37	0.604
Fri.	25	20 29 53.51	10.428	18 59 59.6	36.91	16 16.98	69.08	12 33.51	0.572
Sat.	26	20 34 3.43	10.395	18 45 3.1	37.77	16 16.88	68.97	12 46.84	0.539
Sun.	27	20 38 12.56	10.362	18 29 46.1	38.62	16 16.73	68.86	12 59.37	0.506
Mon.	28	20 42 20.90	10.329	18 14 8.9	39.45	16 16.60	68.75	13 11.12	0.473
Tues.	29	20 46 28.43	10.296	17 58 12.0	40.26	16 16.46	68.64	13 22.08	0.440
Wed.	30	20 50 35.16	10.263	17 41 55.9	41.06	16 16.32	68.52	13 32.23	0.406
Thur.	31	20 54 41.09	10.230	17 25 20.9	41.84	16 16.17	68.41	13 41.58	0.373
Fri.	32	20 58 46.21	10.196	S.17 8 27.2	42.60	16 16.02	68.29	13 50.11	0.339

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	18 46 24.22	11.044	S. 23 1 29.5	12.24	3 43.63	1.188	18 42 40.59
Wed.	2	18 50 49.12	11.031	22 56 21.9	13.39	4 11.97	1.174	18 46 37.15
Thur.	3	18 55 13.68	11.016	22 50 46.9	14.53	4 39.97	1.159	18 50 33.71
Fri.	4	18 59 37.86	10.999	22 44 44.6	15.66	5 7.60	1.143	18 54 30.26
Sat.	5	19 4 1.64	10.981	22 38 15.3	16.79	5 34.82	1.125	18 58 26.82
Sun.	6	19 8 24.98	10.962	22 31 19.1	17.90	6 1.60	1.106	19 2 23.38
Mon.	7	19 12 47.85	10.942	22 23 56.2	19.01	6 27.92	1.086	19 6 19.93
Tues.	8	19 17 10.20	10.921	22 16 6.8	20.10	6 53.71	1.064	19 10 16.49
Wed.	9	19 21 32.03	10.898	22 7 51.2	21.19	7 18.98	1.042	19 14 13.05
Thur.	10	19 25 53.31	10.874	21 59 9.6	22.26	7 43.71	1.018	19 18 9.60
Fri.	11	19 30 14.00	10.849	21 50 2.3	23.33	8 7.84	0.993	19 22 6.16
Sat.	12	19 34 34.09	10.823	21 40 29.7	24.38	8 31.37	0.967	19 26 2.72
Sun.	13	19 38 53.54	10.796	21 30 32.0	25.43	8 54.27	0.940	19 29 59.27
Mon.	14	19 43 12.31	10.768	21 20 9.3	26.46	9 16.48	0.912	19 33 55.83
Tues.	15	19 47 30.41	10.739	21 9 22.0	27.48	9 38.03	0.883	19 37 52.38
Wed.	16	19 51 47.82	10.710	20 58 10.4	28.49	9 58.88	0.854	19 41 48.94
Thur.	17	19 56 4.52	10.680	20 46 34.9	29.48	10 19.02	0.824	19 45 45.50
Fri.	18	20 0 20.49	10.650	20 34 35.8	30.46	10 38.44	0.794	19 49 42.05
Sat.	19	20 4 35.73	10.620	20 22 13.4	31.42	10 57.12	0.763	19 53 38.61
Sun.	20	20 8 50.23	10.589	20 9 27.9	32.37	11 15.07	0.732	19 57 35.16
Mon.	21	20 13 3.99	10.558	19 56 19.7	33.31	11 32.27	0.701	20 1 31.72
Tues.	22	20 17 16.99	10.526	19 42 49.2	34.23	11 48.71	0.669	20 5 28.28
Wed.	23	20 21 29.21	10.494	19 28 56.7	35.14	12 4.38	0.637	20 9 24.83
Thur.	24	20 25 40.65	10.461	19 14 42.6	36.03	12 19.26	0.604	20 13 21.39
Fri.	25	20 29 51.33	10.428	19 0 7.3	36.91	12 33.39	0.572	20 17 17.94
Sat.	26	20 34 1.22	10.395	18 45 11.1	37.77	12 46.72	0.539	20 21 14.50
Sun.	27	20 38 10.32	10.362	18 29 54.4	38.62	12 59.27	0.506	20 25 11.05
Mon.	28	20 42 18.63	10.329	18 14 17.5	39.45	13 11.02	0.473	20 29 7.61
Tues.	29	20 46 26.14	10.296	17 58 21.0	40.26	13 21.98	0.440	20 33 4.16
Wed.	30	20 50 32.85	10.263	17 42 5.2	41.06	13 32.13	0.406	20 37 0.72
Thur.	31	20 54 38.76	10.230	17 25 30.4	41.84	13 41.49	0.373	20 40 57.27
Fri.	32	20 58 43.86	10.196	S. 17 8 37.0	42.60	13 50.03	0.339	20 44 53.83

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	280 40 16.4	40 16.7	152.95	+0.34	9.9926627	0.8	5 16 27.41
2	2	281 41 27.2	41 27.4	152.95	0.41	.9926656	1.6	5 12 31.52
3	3	282 42 38.3	42 38.3	152.95	0.47	.9926704	2.2	5 8 35.61
4	4	283 43 49.5	43 49.3	152.96	0.49	.9926769	2.8	5 4 39.69
5	5	284 45 0.6	45 0.2	152.96	0.47	.9926851	3.5	5 0 43.78
6	6	285 46 11.6	46 11.1	152.95	0.42	.9926949	4.3	4 56 47.87
7	7	286 47 22.3	47 21.7	152.94	0.34	.9927062	5.0	4 52 51.96
8	8	287 48 32.7	48 31.9	152.92	0.25	.9927193	5.8	4 48 56.04
9	9	288 49 42.6	49 41.6	152.90	0.14	.9927343	6.6	4 45 0.13
10	10	289 50 52.0	50 50.8	152.88	+0.02	.9927510	7.4	4 41 4.22
11	11	290 52 0.9	51 59.6	152.86	—0.11	.9927696	8.2	4 37 8.31
12	12	291 53 9.2	53 7.8	152.83	0.24	.9927902	9.0	4 33 12.40
13	13	292 54 16.8	54 15.2	152.80	0.36	.9928130	9.9	4 29 16.49
14	14	293 55 23.6	55 21.8	152.77	0.46	.9928381	10.9	4 25 20.58
15	15	294 56 29.5	56 27.5	152.74	0.54	.9928656	11.9	4 21 24.67
16	16	295 57 34.7	57 32.6	152.70	0.60	.9928955	13.0	4 17 28.76
17	17	296 58 39.1	58 36.9	152.67	0.63	.9929279	14.1	4 13 32.86
18	18	297 59 42.7	59 40.4	152.64	0.63	.9929630	15.2	4 9 36.94
19	19	299 0 45.6	0 43.1	152.61	0.60	.9930008	16.4	4 5 41.03
20	20	300 1 47.7	1 45.0	152.58	0.53	.9930414	17.5	4 1 45.13
21	21	301 2 49.1	2 46.3	152.55	0.44	.9930846	18.6	3 57 49.22
22	22	302 3 49.8	3 46.9	152.52	0.33	.9931306	19.7	3 53 53.31
23	23	303 4 49.9	4 46.9	152.49	0.20	.9931794	20.8	3 49 57.40
24	24	304 5 49.3	5 46.1	152.46	—0.07	.9932307	21.8	3 46 1.48
25	25	305 6 48.1	6 44.7	152.43	+0.07	.9932843	22.8	3 42 5.57
26	26	306 7 46.3	7 42.8	152.41	0.21	.9933403	23.8	3 38 9.66
27	27	307 8 43.9	8 40.3	152.38	0.33	.9933986	24.7	3 34 13.75
28	28	308 9 40.8	9 37.1	152.35	0.43	.9934590	25.6	3 30 17.84
29	29	309 10 36.9	10 33.0	152.32	0.51	.9935213	26.4	3 26 21.93
30	30	310 11 32.3	11 28.2	152.29	0.56	.9935853	27.1	3 22 26.02
31	31	311 12 27.0	12 22.8	152.26	0.58	.9936510	27.8	3 18 30.11
32	32	312 13 20.9	13 16.6	152.22	+0.58	9.9937183	28.4	3 14 34.21

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 46.1	14 45.0	54 5.2	−0.43	54 1.1	−0.26	21 16.7	1.91	25.3
2	14 44.4	14 44.3	53 59.1	−0.10	53 58.8	+0.05	22 3.2	1.95	26.3
3	14 44.7	14 45.6	54 0.3	+0.19	54 3.3	0.32	22 50.6	1.99	27.3
4	14 46.8	14 48.4	54 7.8	0.43	54 13.6	0.53	23 38.6	2.00	28.3
5	14 50.3	14 52.4	54 20.5	0.63	54 28.6	0.71	6		29.3
6	14 54.9	14 57.6	54 37.7	0.80	54 47.7	0.87	0 26.8	2.00	0.5
7	15 0.6	15 3.8	54 58.7	0.95	55 10.5	1.02	1 14.8	1.99	1.5
8	15 7.3	15 11.0	55 23.2	1.10	55 36.8	1.17	2 2.3	1.97	2.5
9	15 14.9	15 19.1	55 51.3	1.24	56 6.6	1.32	2 49.4	1.96	3.5
10	15 23.5	15 28.2	56 22.8	1.39	56 40.0	1.46	3 36.3	1.96	4.5
11	15 33.1	15 38.2	56 58.0	1.53	57 16.7	1.59	4 23.4	1.98	5.5
12	15 43.5	15 49.0	57 36.3	1.65	57 56.4	1.69	5 11.5	2.04	6.5
13	15 54.6	16 0.2	58 16.9	1.72	58 37.6	1.72	6 1.2	2.12	7.5
14	16 5.8	16 11.3	58 58.1	1.70	59 18.2	1.63	6 53.3	2.23	8.5
15	16 16.5	16 21.3	59 37.2	1.53	59 54.7	1.38	7 48.4	2.35	9.5
16	16 25.5	16 29.0	60 10.2	1.19	60 23.2	0.96	8 46.4	2.47	10.5
17	16 31.7	16 33.5	60 33.3	0.69	60 39.8	+0.39	9 46.8	2.54	11.5
18	16 34.3	16 33.9	60 42.6	+0.06	60 41.3	−0.28	10 48.3	2.54	12.5
19	16 32.5	16 29.9	60 35.9	−0.63	60 26.3	0.96	11 49.0	2.48	13.5
20	16 26.2	16 21.5	60 12.8	1.28	59 55.8	1.56	12 47.5	2.37	14.5
21	16 16.0	16 9.8	59 35.6	1.80	59 12.8	1.99	13 43.0	2.24	15.5
22	16 03.0	15 55.9	58 47.9	2.14	58 21.7	2.23	14 35.1	2.11	16.5
23	15 48.5	15 41.1	57 54.6	2.27	57 27.3	2.26	15 24.4	2.01	17.5
24	15 33.8	15 26.7	57 0.4	2.21	56 34.4	2.12	16 11.5	1.93	18.5
25	15 20.0	15 13.7	56 9.7	1.99	55 46.7	1.83	16 57.2	1.89	19.5
26	15 8.0	15 2.9	55 25.7	1.65	55 7.0	1.46	17 42.2	1.87	20.5
27	14 58.5	14 54.7	54 50.7	1.26	54 36.9	1.04	18 27.1	1.88	21.5
28	14 51.6	14 49.3	54 25.7	0.83	54 17.0	0.61	19 12.4	1.90	22.5
29	14 47.6	14 46.7	54 10.9	−0.40	54 7.4	−0.20	19 58.5	1.94	23.5
30	14 46.4	14 46.7	54 6.2	+0.00	54 7.4	+0.19	20 45.4	1.97	24.5
31	14 47.6	14 49.0	54 10.8	0.37	54 16.2	0.53	21 33.1	2.00	25.5
32	14 51.0	14 53.4	54 23.4	+0.67	54 32.2	+0.80	22 21.4	2.01	26.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 20 15.33	1.9876	S. 14 10 27.1	6.100
1	15 22 14.63	1.9891	14 16 31.2	6.037
2	15 24 14.02	1.9907	14 22 31.5	5.974
3	15 26 13.51	1.9922	14 28 28.1	5.911
4	15 28 13.09	1.9937	14 34 20.9	5.847
5	15 30 12.75	1.9952	14 40 9.8	5.783
6	15 32 12.51	1.9967	14 45 54.9	5.719
7	15 34 12.35	1.9982	14 51 36.1	5.654
8	15 36 12.29	1.9997	14 57 13.4	5.589
9	15 38 12.31	2.0012	15 2 46.8	5.523
10	15 40 12.44	2.0028	15 8 16.2	5.457
11	15 42 12.65	2.0043	15 13 41.6	5.390
12	15 44 12.96	2.0059	15 19 3.0	5.324
13	15 46 13.36	2.0075	15 24 20.4	5.256
14	15 48 13.86	2.0091	15 29 33.8	5.189
15	15 50 14.45	2.0107	15 34 43.1	5.121
16	15 52 15.14	2.0122	15 39 48.3	5.052
17	15 54 15.92	2.0138	15 44 49.4	4.983
18	15 56 16.80	2.0155	15 49 46.3	4.914
19	15 58 17.78	2.0171	15 54 39.0	4.844
20	16 0 18.85	2.0187	15 59 27.6	4.774
21	16 2 20.02	2.0203	16 4 12.0	4.704
22	16 4 21.29	2.0219	16 8 52.1	4.633
23	16 6 22.65	2.0235	S. 16 13 27.9	4.562

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 8 24.11	2.0252	S. 16 17 59.5	4.490
1	16 10 25.67	2.0267	16 22 26.7	4.418
2	16 12 27.32	2.0283	16 26 49.6	4.346
3	16 14 29.07	2.0300	16 31 8.2	4.273
4	16 16 30.92	2.0316	16 35 22.4	4.200
5	16 18 32.86	2.0332	16 39 32.2	4.126
6	16 20 34.90	2.0347	16 43 37.6	4.052
7	16 22 37.03	2.0364	16 47 38.5	3.978
8	16 24 39.27	2.0380	16 51 35.0	3.904
9	16 26 41.59	2.0396	16 55 27.0	3.829
10	16 28 44.01	2.0412	16 59 14.5	3.754
11	16 30 46.53	2.0427	17 2 57.4	3.678
12	16 32 49.14	2.0443	17 6 35.8	3.602
13	16 34 51.84	2.0458	17 10 9.6	3.526
14	16 36 54.64	2.0474	17 13 39.0	3.449
15	16 38 57.53	2.0489	17 17 3.6	3.372
16	16 41 0.51	2.0504	17 20 23.6	3.295
17	16 43 3.58	2.0520	17 23 39.0	3.217
18	16 45 6.75	2.0535	17 26 49.7	3.139
19	16 47 10.00	2.0549	17 29 55.7	3.061
20	16 49 13.34	2.0564	17 32 57.0	2.983
21	16 51 16.77	2.0579	17 35 53.6	2.904
22	16 53 20.29	2.0594	17 38 45.5	2.825
23	16 55 23.90	2.0608	17 41 32.6	2.746
24	16 57 27.59	2.0622	S. 17 44 15.0	2.666

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 57 27.59	2.0622	S. 17 44 15.0	2.666
1	16 59 31.37	2.0636	17 46 52.6	2.586
2	17 1 35.23	2.0650	17 49 25.4	2.506
3	17 3 39.17	2.0664	17 51 53.3	2.425
4	17 5 43.20	2.0678	17 54 16.4	2.344
5	17 7 47.31	2.0692	17 56 34.6	2.263
6	17 9 51.50	2.0705	17 58 48.0	2.182
7	17 11 55.77	2.0718	18 0 56.5	2.100
8	17 14 0.12	2.0731	18 3 0.1	2.018
9	17 16 4.54	2.0743	18 4 58.8	1.936
10	17 18 9.04	2.0756	18 6 52.5	1.854
11	17 20 13.62	2.0769	18 8 41.3	1.772
12	17 22 18.27	2.0781	18 10 25.2	1.689
13	17 24 22.99	2.0793	18 12 4.0	1.606
14	17 26 27.79	2.0805	18 13 37.9	1.523
15	17 28 32.65	2.0816	18 15 6.8	1.439
16	17 30 37.58	2.0827	18 16 30.7	1.356
17	17 32 42.58	2.0839	18 17 49.5	1.272
18	17 34 47.65	2.0850	18 19 3.3	1.188
19	17 36 52.78	2.0861	18 20 12.1	1.104
20	17 38 57.98	2.0872	18 21 15.8	1.019
21	17 41 3.24	2.0882	18 22 14.4	0.935
22	17 43 8.56	2.0891	18 23 7.9	0.850
23	17 45 13.93	2.0901	S. 18 23 56.4	0.765

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 47 19.37	2.0911	S. 18 24 39.7	0.680
1	17 49 24.86	2.0920	18 25 18.0	0.595
2	17 51 30.41	2.0929	18 25 51.1	0.509
3	17 53 36.01	2.0937	18 26 19.1	0.424
4	17 55 41.66	2.0946	18 26 42.0	0.338
5	17 57 47.36	2.0954	18 26 59.6	0.253
6	17 59 53.11	2.0962	18 27 12.2	0.167
7	18 1 58.91	2.0970	18 27 19.6	0.081
8	18 4 4.75	2.0977	18 27 21.9	0.006
9	18 6 10.64	2.0985	18 27 19.0	0.091
10	18 8 16.57	2.0992	18 27 10.9	0.177
11	18 10 22.54	2.0998	18 26 57.7	0.263
12	18 12 28.55	2.1005	18 26 39.3	0.349
13	18 14 34.60	2.1011	18 26 15.7	0.436
14	18 16 40.68	2.1017	18 25 46.9	0.523
15	18 18 46.80	2.1022	18 25 13.0	0.609
16	18 20 52.95	2.1027	18 24 33.9	0.696
17	18 22 59.13	2.1032	18 23 49.5	0.782
18	18 25 5.34	2.1037	18 23 0.0	0.869
19	18 27 11.58	2.1042	18 22 5.3	0.956
20	18 29 17.84	2.1046	18 21 5.4	1.042
21	18 31 24.13	2.1050	18 20 0.3	1.128
22	18 33 30.44	2.1053	18 18 50.0	1.215
23	18 35 36.77	2.1057	18 17 34.5	1.301
24	18 37 43.12	2.1060	S. 18 16 13.8	1.388

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 37 43.12	2.1060	S. 18 16 13.8	1.388
1	18 39 49.49	2.1063	18 14 47.9	1.474
2	18 41 55.87	2.1065	18 13 16.8	1.561
3	18 44 2.27	2.1067	18 11 40.6	1.647
4	18 46 8.68	2.1069	18 9 59.2	1.734
5	18 48 15.10	2.1071	18 8 12.6	1.820
6	18 50 21.53	2.1073	18 6 20.8	1.906
7	18 52 27.97	2.1073	18 4 23.8	1.992
8	18 54 34.41	2.1074	18 2 21.7	2.078
9	18 56 40.86	2.1075	18 0 14.4	2.164
10	18 58 47.31	2.1076	17 58 2.0	2.250
11	19 0 53.77	2.1076	17 55 44.4	2.336
12	19 3 0.22	2.1075	17 53 21.6	2.422
13	19 5 6.67	2.1075	17 50 53.7	2.507
14	19 7 13.12	2.1074	17 48 20.7	2.593
15	19 9 19.56	2.1073	17 45 42.6	2.678
16	19 11 26.00	2.1072	17 42 59.3	2.763
17	19 13 32.43	2.1071	17 40 11.0	2.848
18	19 15 38.85	2.1069	17 37 17.6	2.933
19	19 17 45.26	2.1067	17 34 19.1	3.018
20	19 19 51.65	2.1064	17 31 15.5	3.102
21	19 21 58.03	2.1062	17 28 6.8	3.186
22	19 24 4.40	2.1060	17 24 53.1	3.270
23	19 26 10.76	2.1057	S. 17 21 34.3	3.354

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 28 17.09	2.1054	S. 17 18 10.5	3.438
1	19 30 23.41	2.1051	17 14 41.7	3.522
2	19 32 29.70	2.1047	17 11 7.9	3.605
3	19 34 35.97	2.1043	17 7 29.1	3.688
4	19 36 42.22	2.1040	17 3 45.3	3.771
5	19 38 48.45	2.1036	16 59 56.6	3.853
6	19 40 54.65	2.1032	16 56 3.0	3.935
7	19 43 0.82	2.1027	16 52 4.4	4.017
8	19 45 6.97	2.1022	16 48 0.9	4.099
9	19 47 13.09	2.1017	16 43 52.5	4.181
10	19 49 19.18	2.1012	16 39 39.2	4.262
11	19 51 25.23	2.1007	16 35 21.0	4.343
12	19 53 31.26	2.1002	16 30 58.0	4.423
13	19 55 37.25	2.0996	16 26 30.2	4.504
14	19 57 43.21	2.0990	16 21 57.4	4.584
15	19 59 49.13	2.0984	16 17 20.0	4.663
16	20 1 55.02	2.0978	16 12 37.8	4.743
17	20 4 0.87	2.0972	16 7 50.9	4.822
18	20 6 6.69	2.0966	16 2 59.2	4.900
19	20 8 12.46	2.0959	15 58 2.8	4.978
20	20 10 18.20	2.0952	15 53 1.8	5.057
21	20 12 23.89	2.0946	15 47 56.1	5.134
22	20 14 29.55	2.0939	15 42 45.7	5.212
23	20 16 35.16	2.0932	15 37 30.7	5.289
24	20 18 40.73	2.0924	S. 15 32 11.1	5.365

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 18 40.73	2.0924	S. 15 32 11.1	5.365
1	20 20 46.26	2.0917	15 26 46.9	5.441
2	20 22 51.74	2.0910	15 21 18.1	5.517
3	20 24 57.18	2.0903	15 15 44.8	5.592
4	20 27 2.58	2.0896	15 10 7.0	5.667
5	20 29 7.93	2.0888	15 4 24.7	5.742
6	20 31 13.24	2.0881	14 58 38.0	5.816
7	20 33 18.50	2.0873	14 52 46.8	5.890
8	20 35 23.71	2.0865	14 46 51.2	5.963
9	20 37 28.88	2.0857	14 40 51.2	6.036
10	20 39 34.00	2.0850	14 34 46.9	6.109
11	20 41 39.08	2.0842	14 28 38.2	6.181
12	20 43 44.11	2.0834	14 22 25.2	6.252
13	20 45 49.09	2.0826	14 16 7.9	6.323
14	20 47 54.02	2.0818	14 9 46.4	6.394
15	20 49 58.91	2.0811	14 3 20.7	6.464
16	20 52 3.76	2.0803	13 56 50.7	6.534
17	20 54 8.55	2.0795	13 50 16.6	6.603
18	20 56 13.30	2.0787	13 43 38.3	6.672
19	20 58 18.00	2.0779	13 36 55.9	6.741
20	21 0 22.65	2.0772	13 30 9.4	6.808
21	21 2 27.26	2.0764	13 23 18.9	6.876
22	21 4 31.82	2.0756	13 16 24.3	6.943
23	21 6 36.33	2.0748	S. 13 9 25.7	7.009

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 8 40.80	2.0741	S. 13 2 23.2	7.075
1	21 10 45.22	2.0733	12 55 16.7	7.140
2	21 12 49.60	2.0726	12 48 6.3	7.205
3	21 14 53.93	2.0718	12 40 52.1	7.270
4	21 16 58.22	2.0711	12 33 34.0	7.334
5	21 19 2.46	2.0703	12 26 12.1	7.397
6	21 21 6.66	2.0696	12 18 46.4	7.459
7	21 23 10.82	2.0690	12 11 17.0	7.521
8	21 25 14.94	2.0683	12 3 43.8	7.583
9	21 27 19.01	2.0676	11 56 7.0	7.644
10	21 29 23.04	2.0669	11 48 26.5	7.705
11	21 31 27.04	2.0662	11 40 42.4	7.765
12	21 33 30.99	2.0655	11 32 54.7	7.824
13	21 35 34.90	2.0649	11 25 3.5	7.883
14	21 37 38.78	2.0643	11 17 8.7	7.942
15	21 39 42.62	2.0637	11 9 10.5	7.999
16	21 41 46.43	2.0632	11 1 8.8	8.057
17	21 43 50.20	2.0626	10 53 3.7	8.114
18	21 45 53.93	2.0620	10 44 55.2	8.170
19	21 47 57.64	2.0615	10 36 43.3	8.225
20	21 50 1.31	2.0609	10 28 28.1	8.280
21	21 52 4.95	2.0604	10 20 9.7	8.334
22	21 54 8.56	2.0599	10 11 48.0	8.388
23	21 56 12.14	2.0595	10 3 23.1	8.441
24	21 58 15.70	2.0591	S. 9 54 55.0	8.494

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 58 15.70	2.0591	S. 9 54 55.0	8.494
1	22 0 19.23	2.0587	9 46 23.8	8.546
2	22 2 22.74	2.0582	9 37 49.5	8.597
3	22 4 26.22	2.0578	9 29 12.1	8.646
4	22 6 29.68	2.0575	9 20 31.7	8.696
5	22 8 33.12	2.0572	9 11 48.3	8.746
6	22 10 36.54	2.0569	9 3 2.0	8.797
7	22 12 39.95	2.0567	8 54 12.7	8.845
8	22 14 43.34	2.0564	8 45 20.6	8.893
9	22 16 46.72	2.0562	8 36 25.6	8.940
10	22 18 50.08	2.0560	8 27 27.8	8.986
11	22 20 53.44	2.0558	8 18 27.3	9.032
12	22 22 56.78	2.0557	8 9 24.0	9.077
13	22 25 0.12	2.0556	8 0 18.0	9.122
14	22 27 3.45	2.0555	7 51 9.4	9.166
15	22 29 6.78	2.0554	7 41 58.2	9.209
16	22 31 10.10	2.0553	7 32 44.4	9.251
17	22 33 13.42	2.0554	7 23 28.0	9.293
18	22 35 16.75	2.0554	7 14 9.2	9.334
19	22 37 20.09	2.0555	7 4 47.9	9.375
20	22 39 23.42	2.0556	6 55 24.2	9.415
21	22 41 26.76	2.0557	6 45 58.1	9.454
22	22 43 30.11	2.0559	6 36 29.7	9.493
23	22 45 33.47	2.0562	S. 6 26 59.0	9.531

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 47 36.85	2.0564	S. 6 17 26.0	9.568
1	22 49 40.23	2.0566	6 7 50.8	9.604
2	22 51 43.64	2.0570	5 58 13.5	9.640
3	22 53 47.07	2.0574	5 48 34.0	9.676
4	22 55 50.53	2.0579	5 38 52.4	9.710
5	22 57 54.02	2.0583	5 29 8.8	9.744
6	22 59 57.52	2.0586	5 19 23.1	9.777
7	23 2 1.04	2.0590	5 9 35.5	9.809
8	23 4 4.60	2.0596	4 59 46.0	9.841
9	23 6 8.19	2.0602	4 49 54.6	9.872
10	23 8 11.82	2.0608	4 40 1.4	9.902
11	23 10 15.49	2.0615	4 30 6.3	9.932
12	23 12 19.20	2.0622	4 20 9.5	9.961
13	23 14 22.95	2.0629	4 10 11.0	9.989
14	23 16 26.75	2.0637	4 0 10.8	10.017
15	23 18 30.59	2.0645	3 50 9.0	10.044
16	23 20 34.49	2.0654	3 40 5.6	10.070
17	23 22 38.44	2.0663	3 30 0.6	10.095
18	23 24 42.44	2.0672	3 19 54.2	10.120
19	23 26 46.50	2.0682	3 9 46.3	10.143
20	23 28 50.62	2.0692	2 59 37.0	10.166
21	23 30 54.81	2.0703	2 49 26.4	10.188
22	23 32 59.06	2.0714	2 39 14.4	10.210
23	23 35 3.38	2.0726	2 29 1.1	10.231
24	23 37 7.77	2.0738	S. 2 18 46.6	10.251

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 37 7.77	2.0738	S. 2 18 46.6	10.251
1	23 39 12.23	2.0750	2 8 30.9	10.270
2	23 41 16.77	2.0763	1 58 14.1	10.289
3	23 43 21.39	2.0777	1 47 56.2	10.307
4	23 45 26.09	2.0790	1 37 37.3	10.323
5	23 47 30.87	2.0805	1 27 17.4	10.340
6	23 49 35.75	2.0821	1 16 56.6	10.356
7	23 51 40.72	2.0835	1 6 34.8	10.370
8	23 53 45.77	2.0850	0 56 12.2	10.383
9	23 55 50.92	2.0867	0 45 48.8	10.396
10	23 57 56.17	2.0883	0 35 24.6	10.409
11	0 0 1.52	2.0900	0 24 59.8	10.420
12	0 2 6.97	2.0917	0 14 34.3	10.431
13	0 4 12.53	2.0936	S. 0 4 8.1	10.440
14	0 6 18.20	2.0954	N. 0 6 18.6	10.449
15	0 8 23.98	2.0973	0 16 45.8	10.456
16	0 10 29.87	2.0992	0 27 13.5	10.464
17	0 12 35.89	2.1012	0 37 41.6	10.471
18	0 14 42.02	2.1032	0 48 10.1	10.477
19	0 16 48.28	2.1054	0 58 38.9	10.482
20	0 18 54.67	2.1076	1 9 7.9	10.486
21	0 21 1.19	2.1098	1 19 37.1	10.489
22	0 23 7.84	2.1120	1 30 6.5	10.491
23	0 25 14.63	2.1142	N. 1 40 36.0	10.493

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 27 21.55	2.1166	N. 1 51 5.5	10.493
1	0 29 28.62	2.1190	2 1 35.1	10.492
2	0 31 35.83	2.1214	2 12 4.6	10.491
3	0 33 43.19	2.1239	2 22 34.0	10.489
4	0 35 50.70	2.1264	2 33 3.2	10.486
5	0 37 58.36	2.1290	2 43 32.2	10.482
6	0 40 6.18	2.1317	2 54 1.0	10.477
7	0 42 14.16	2.1343	3 4 29.4	10.471
8	0 44 22.30	2.1371	3 14 57.5	10.464
9	0 46 30.61	2.1398	3 25 25.2	10.457
10	0 48 39.08	2.1427	3 35 52.4	10.448
11	0 50 47.73	2.1456	3 46 19.0	10.439
12	0 52 56.55	2.1485	3 56 45.0	10.428
13	0 55 5.55	2.1514	4 7 10.4	10.417
14	0 57 14.72	2.1544	4 17 35.1	10.405
15	0 59 24.08	2.1576	4 27 59.0	10.392
16	1 1 33.63	2.1607	4 38 22.1	10.377
17	1 3 43.36	2.1638	4 48 44.3	10.362
18	1 5 53.28	2.1670	4 59 5.5	10.346
19	1 8 3.40	2.1703	5 9 25.8	10.329
20	1 10 13.72	2.1736	5 19 45.0	10.311
21	1 12 24.23	2.1769	5 30 3.1	10.292
22	1 14 34.95	2.1803	5 40 20.0	10.271
23	1 16 45.87	2.1837	5 50 35.6	10.250
24	1 18 57.00	2.1872	N. 6 0 50.0	10.228

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 18 57.00	2.1872	N. 6 0 50.0	10.228
1	1 21 8.34	2.1907	6 11 3.0	10.206
2	1 23 19.89	2.1943	6 21 14.6	10.181
3	1 25 31.66	2.1980	6 31 24.7	10.156
4	1 27 43.65	2.2017	6 41 33.3	10.130
5	1 29 55.86	2.2053	6 51 40.3	10.102
6	1 32 8.29	2.2091	7 1 45.6	10.074
7	1 34 20.95	2.2129	7 11 49.2	10.044
8	1 36 33.84	2.2167	7 21 51.0	10.014
9	1 38 46.96	2.2206	7 31 50.9	9.983
10	1 41 0.32	2.2246	7 41 48.9	9.950
11	1 43 13.91	2.2285	7 51 44.9	9.916
12	1 45 27.74	2.2326	8 1 38.9	9.882
13	1 47 41.81	2.2366	8 11 30.8	9.846
14	1 49 56.13	2.2407	8 21 20.5	9.809
15	1 52 10.69	2.2448	8 31 7.9	9.771
16	1 54 25.50	2.2489	8 40 53.0	9.732
17	1 56 40.56	2.2531	8 50 35.7	9.691
18	1 58 55.87	2.2573	9 0 16.0	9.650
19	2 1 11.44	2.2616	9 9 53.7	9.608
20	2 3 27.26	2.2659	9 19 28.9	9.564
21	2 5 43.34	2.2702	9 29 1.4	9.519
22	2 7 59.68	2.2746	9 38 31.2	9.473
23	2 10 16.29	2.2790	N. 9 47 58.2	9.426

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 12 33.16	2.2834	N. 9 57 22.3	9.378
1	2 14 50.29	2.2878	10 6 43.5	9.329
2	2 17 7.70	2.2923	10 16 1.7	9.278
3	2 19 25.37	2.2968	10 25 16.9	9.227
4	2 21 43.31	2.3013	10 34 28.9	9.174
5	2 24 1.53	2.3059	10 43 37.7	9.120
6	2 26 20.02	2.3105	10 52 43.3	9.066
7	2 28 38.79	2.3151	11 1 45.5	9.008
8	2 30 57.83	2.3197	11 10 44.3	8.950
9	2 33 17.15	2.3243	11 19 39.6	8.893
10	2 35 36.75	2.3290	11 28 31.3	8.833
11	2 37 56.63	2.3337	11 37 19.4	8.771
12	2 40 16.79	2.3384	11 46 3.8	8.708
13	2 42 37.23	2.3431	11 54 44.4	8.645
14	2 44 57.96	2.3479	12 3 21.2	8.580
15	2 47 18.98	2.3527	12 11 54.0	8.514
16	2 49 40.28	2.3574	12 20 22.8	8.447
17	2 52 1.86	2.3621	12 28 47.6	8.379
18	2 54 23.73	2.3669	12 37 8.3	8.309
19	2 56 45.89	2.3717	12 45 24.7	8.238
20	2 59 8.33	2.3764	12 53 36.8	8.166
21	3 1 31.06	2.3812	13 1 44.6	8.093
22	3 3 54.08	2.3861	13 9 48.0	8.019
23	3 6 17.39	2.3909	13 17 46.8	7.943
24	3 8 40.99	2.3957	N.13 25 41.1	7.866

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 8 40.99	2.3957	N.13 25 41.1	7.866
1	3 11 4.87	2.4005	13 33 30.7	7.788
2	3 13 29.05	2.4053	13 41 15.6	7.708
3	3 15 53.51	2.4100	13 48 55.7	7.626
4	3 18 18.25	2.4148	13 56 30.9	7.546
5	3 20 43.29	2.4196	14 4 1.2	7.463
6	3 23 8.61	2.4243	14 11 26.5	7.379
7	3 25 34.21	2.4291	14 18 46.7	7.294
8	3 28 0.10	2.4338	14 26 1.7	7.207
9	3 30 26.27	2.4386	14 33 11.5	7.120
10	3 32 52.72	2.4433	14 40 16.0	7.031
11	3 35 19.46	2.4480	14 47 15.2	6.940
12	3 37 46.48	2.4527	14 54 8.9	6.849
13	3 40 13.78	2.4573	15 0 57.1	6.756
14	3 42 41.35	2.4618	15 7 39.7	6.662
15	3 45 9.20	2.4664	15 14 16.6	6.566
16	3 47 37.32	2.4710	15 20 47.8	6.472
17	3 50 5.72	2.4755	15 27 13.2	6.375
18	3 52 34.39	2.4800	15 33 32.8	6.276
19	3 55 3.32	2.4844	15 39 46.4	6.177
20	3 57 32.52	2.4889	15 45 54.0	6.077
21	4 0 1.99	2.4933	15 51 55.6	5.975
22	4 2 31.72	2.4977	15 57 51.0	5.872
23	4 5 1.71	2.5019	N.16 3 40.3	5.769

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 7 31.95	2.5062	N.16 9 23.3	5.664
1	4 10 2.45	2.5104	16 15 0.0	5.558
2	4 12 33.20	2.5146	16 20 30.2	5.451
3	4 15 4.20	2.5187	16 25 54.0	5.342
4	4 17 35.44	2.5227	16 31 11.3	5.233
5	4 20 6.93	2.5267	16 36 22.0	5.123
6	4 22 38.65	2.5307	16 41 26.1	5.012
7	4 25 10.61	2.5346	16 46 23.5	4.900
8	4 27 42.80	2.5384	16 51 14.1	4.787
9	4 30 15.22	2.5422	16 55 57.9	4.673
10	4 32 47.86	2.5459	17 0 34.8	4.558
11	4 35 20.72	2.5496	17 5 4.8	4.442
12	4 37 53.80	2.5531	17 9 27.8	4.325
13	4 40 27.09	2.5566	17 13 43.8	4.207
14	4 43 0.59	2.5600	17 17 52.7	4.088
15	4 45 34.29	2.5633	17 21 54.4	3.969
16	4 48 8.19	2.5667	17 25 48.9	3.848
17	4 50 42.29	2.5699	17 29 36.2	3.727
18	4 53 16.58	2.5730	17 33 16.2	3.606
19	4 55 51.05	2.5760	17 36 48.9	3.483
20	4 58 25.70	2.5790	17 40 14.2	3.360
21	5 1 0.52	2.5818	17 43 32.0	3.236
22	5 3 35.52	2.5846	17 46 42.4	3.110
23	5 6 10.68	2.5873	17 49 45.2	2.985
24	5 8 46.00	2.5900	N.17 52 40.5	2.858

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 8 46.00	2.5900	N.17 52 40.5	2.856
1	5 11 21.48	2.5925	17 55 28.2	2.731
2	5 13 57.10	2.5948	17 58 8.2	2.603
3	5 16 32.86	2.5972	18 0 40.6	2.475
4	5 19 8.77	2.5995	18 3 5.2	2.346
5	5 21 44.80	2.6016	18 5 22.1	2.217
6	5 24 20.96	2.6037	18 7 31.2	2.087
7	5 26 57.24	2.6057	18 9 32.6	1.957
8	5 29 33.64	2.6076	18 11 26.1	1.826
9	5 32 10.14	2.6093	18 13 11.8	1.696
10	5 34 46.76	2.6109	18 14 49.6	1.564
11	5 37 23.45	2.6124	18 16 19.5	1.432
12	5 40 0.24	2.6138	18 17 41.4	1.299
13	5 42 37.11	2.6152	18 18 55.4	1.166
14	5 45 14.06	2.6164	18 20 1.4	1.033
15	5 47 51.09	2.6176	18 20 59.4	0.900
16	5 50 28.18	2.6186	18 21 49.4	0.766
17	5 53 5.32	2.6195	18 22 31.4	0.632
18	5 55 42.52	2.6203	18 23 5.3	0.499
19	5 58 19.76	2.6210	18 23 31.2	0.365
20	6 0 57.04	2.6216	18 23 49.1	0.230
21	6 3 34.35	2.6221	18 23 58.9	0.096
22	6 6 11.69	2.6224	18 24 0.6	0.038
23	6 8 49.04	2.6226	N.18 23 54.2	0.173

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 11 26.41	2.6228	N.18 23 39.8	0.307
1	6 14 3.78	2.6228	18 23 17.3	0.442
2	6 16 41.15	2.6227	18 22 46.8	0.576
3	6 19 18.51	2.6226	18 22 8.2	0.711
4	6 21 55.86	2.6223	18 21 21.5	0.845
5	6 24 33.19	2.6219	18 20 26.8	0.979
6	6 27 10.49	2.6213	18 19 24.0	1.113
7	6 29 47.75	2.6207	18 18 13.2	1.247
8	6 32 24.97	2.6200	18 16 54.4	1.380
9	6 35 2.15	2.6192	18 15 27.6	1.513
10	6 37 39.27	2.6181	18 13 52.8	1.646
11	6 40 16.32	2.6171	18 12 10.0	1.779
12	6 42 53.32	2.6160	18 10 19.2	1.911
13	6 45 30.24	2.6146	18 8 20.6	2.043
14	6 48 7.07	2.6132	18 6 14.0	2.175
15	6 50 43.82	2.6117	18 3 59.5	2.306
16	6 53 20.48	2.6101	18 1 37.2	2.437
17	6 55 57.03	2.6083	17 59 7.1	2.567
18	6 58 33.47	2.6065	17 56 29.2	2.696
19	7 1 9.81	2.6047	17 53 43.5	2.825
20	7 3 46.04	2.6027	17 50 50.1	2.954
21	7 6 22.14	2.6006	17 47 49.0	3.082
22	7 8 58.10	2.5983	17 44 40.3	3.209
23	7 11 33.92	2.5959	17 41 23.9	3.336
24	7 14 9.61	2.5936	N.17 38 0.0	3.462

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 14 9.61	2.5936	N.17 38 0.0	3.462
1	7 16 45.15	2.5910	17 34 28.5	3.588
2	7 19 20.53	2.5884	17 30 49.5	3.712
3	7 21 55.76	2.5857	17 27 3.0	3.836
4	7 24 30.82	2.5829	17 23 9.1	3.960
5	7 27 5.71	2.5800	17 19 7.9	4.081
6	7 29 40.42	2.5769	17 14 59.4	4.203
7	7 32 14.94	2.5738	17 10 43.6	4.323
8	7 34 49.28	2.5707	17 6 20.7	4.442
9	7 37 23.43	2.5675	17 1 50.6	4.561
10	7 39 57.38	2.5642	16 57 13.4	4.679
11	7 42 31.13	2.5608	16 52 29.2	4.796
12	7 45 4.68	2.5573	16 47 38.0	4.912
13	7 47 38.01	2.5537	16 42 39.8	5.027
14	7 50 11.13	2.5501	16 37 34.8	5.141
15	7 52 44.02	2.2463	16 32 22.9	5.254
16	7 55 16.69	2.5426	16 27 4.3	5.366
17	7 57 49.13	2.5387	16 21 39.0	5.476
18	8 0 21.34	2.5348	16 16 7.1	5.585
19	8 2 53.31	2.5308	16 10 28.7	5.694
20	8 5 25.04	2.5267	16 4 43.8	5.802
21	8 7 56.52	2.5227	15 58 52.4	5.909
22	8 10 27.76	2.5185	15 52 54.7	6.014
23	8 12 58.74	2.5142	N.15 46 50.7	6.119

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 15 29.46	2.5098	N.15 40 40.4	6.222
1	8 17 59.92	2.5055	15 34 24.0	6.324
2	8 20 30.12	2.5011	15 28 1.6	6.424
3	8 23 0.05	2.4967	15 21 33.1	6.524
4	8 25 29.72	2.4922	15 14 58.7	6.622
5	8 27 59.11	2.4876	15 8 18.4	6.719
6	8 30 28.22	2.4829	15 1 32.4	6.815
7	8 32 57.06	2.4783	14 54 40.7	6.909
8	8 35 25.62	2.4737	14 47 43.3	7.002
9	8 37 53.90	2.4689	14 40 40.4	7.095
10	8 40 21.89	2.4641	14 33 32.0	7.186
11	8 42 49.59	2.4593	14 26 18.2	7.275
12	8 45 17.00	2.4544	14 18 59.0	7.363
13	8 47 44.12	2.4496	14 11 34.6	7.450
14	8 50 10.95	2.4447	14 4 5.0	7.535
15	8 52 37.48	2.4397	13 56 30.3	7.620
16	8 55 3.71	2.4347	13 48 50.6	7.703
17	8 57 29.65	2.4297	13 41 6.0	7.784
18	8 59 55.28	2.4247	13 33 16.5	7.865
19	9 2 20.62	2.4197	13 25 22.2	7.944
20	9 4 45.65	2.4147	13 17 23.2	8.021
21	9 7 10.38	2.4096	13 9 19.6	8.098
22	9 9 34.80	2.4045	13 1 11.5	8.173
23	9 11 58.92	2.3994	12 52 58.9	8.246
24	9 14 22.73	2.3942	N.12 44 42.0	8.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 14 22.73	2.3942	N.12 44 42.0	8.319
1	9 16 46.23	2.3892	12 36 20.7	8.390
2	9 19 9.43	2.3840	12 27 55.2	8.459
3	9 21 32.31	2.3788	12 19 25.6	8.528
4	9 23 54.89	2.3737	12 10 51.9	8.595
5	9 26 17.16	2.3686	12 2 14.2	8.660
6	9 28 39.12	2.3634	11 53 32.7	8.724
7	9 31 0.77	2.3583	11 44 47.3	8.787
8	9 33 22.11	2.3531	11 35 58.2	8.849
9	9 35 43.14	2.3479	11 27 5.4	8.909
10	9 38 3.86	2.3428	11 18 9.1	8.968
11	9 40 24.28	2.3377	11 9 9.3	9.026
12	9 42 44.38	2.3326	11 0 6.0	9.082
13	9 45 4.18	2.3275	10 50 59.4	9.137
14	9 47 23.66	2.3224	10 41 49.6	9.190
15	9 49 42.84	2.3172	10 32 36.6	9.243
16	9 52 1.72	2.3121	10 23 20.5	9.294
17	9 54 20.29	2.3069	10 14 1.4	9.344
18	9 56 38.55	2.3018	10 4 39.3	9.393
19	9 58 56.51	2.2968	9 55 14.3	9.439
20	10 1 14.17	2.2917	9 45 46.6	9.485
21	10 3 31.52	2.2867	9 36 16.1	9.530
22	10 5 48.58	2.2817	9 26 43.0	9.573
23	10 8 5.33	2.2767	N. 9 17 7.3	9.616

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 10 21.79	2.2718	N. 9 7 29.1	9.656
1	10 12 37.95	2.2668	8 57 48.5	9.696
2	10 14 53.81	2.2619	8 48 5.6	9.734
3	10 17 9.38	2.2571	8 38 20.4	9.771
4	10 19 24.66	2.2522	8 28 33.1	9.807
5	10 21 39.64	2.2474	8 18 43.6	9.841
6	10 23 54.34	2.2426	8 8 52.1	9.875
7	10 26 8.75	2.2378	7 58 58.6	9.907
8	10 28 22.87	2.2330	7 49 3.2	9.938
9	10 30 36.71	2.2283	7 39 6.0	9.968
10	10 32 50.27	2.2236	7 29 7.0	9.997
11	10 35 3.54	2.2189	7 19 6.4	10.024
12	10 37 16.54	2.2143	7 9 4.1	10.051
13	10 39 29.26	2.2097	6 59 0.3	10.076
14	10 41 41.71	2.2052	6 48 55.0	10.100
15	10 43 53.88	2.2007	6 38 48.3	10.123
16	10 46 5.79	2.1962	6 28 40.2	10.145
17	10 48 17.42	2.1917	6 18 30.9	10.166
18	10 50 28.79	2.1873	6 8 20.4	10.186
19	10 52 39.90	2.1830	5 58 8.7	10.204
20	10 54 50.75	2.1787	5 47 56.0	10.221
21	10 57 1.34	2.1743	5 37 42.2	10.237
22	10 59 11.67	2.1700	5 27 27.5	10.253
23	11 1 21.74	2.1658	5 17 11.9	10.267
24	11 3 31.57	2.1617	N. 5 6 55.5	10.280

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 3 31.57	2.1617	N. 5 6 55.5	10.280
1	11 5 41.15	2.1576	4 56 38.3	10.292
2	11 7 50.48	2.1534	4 46 20.5	10.303
3	11 9 59.56	2.1494	4 36 2.0	10.313
4	11 12 8.41	2.1455	4 25 42.9	10.322
5	11 14 17.02	2.1416	4 15 23.3	10.330
6	11 16 25.39	2.1376	4 5 3.3	10.337
7	11 18 33.52	2.1336	3 54 42.9	10.343
8	11 20 41.43	2.1298	3 44 22.2	10.348
9	11 22 49.10	2.1260	3 34 1.2	10.352
10	11 24 56.55	2.1223	3 23 40.0	10.356
11	11 27 3.78	2.1187	3 13 18.6	10.357
12	11 29 10.79	2.1150	3 2 57.1	10.359
13	11 31 17.58	2.1113	2 52 35.6	10.360
14	11 33 24.15	2.1078	2 42 14.0	10.360
15	11 35 30.52	2.1043	2 31 52.5	10.358
16	11 37 36.67	2.1008	2 21 31.1	10.356
17	11 39 42.62	2.0975	2 11 9.9	10.352
18	11 41 48.37	2.0941	2 0 48.9	10.348
19	11 43 53.92	2.0907	1 50 28.2	10.343
20	11 45 59.25	2.0874	1 40 7.8	10.337
21	11 48 4.40	2.0842	1 29 47.8	10.330
22	11 50 9.36	2.0811	1 19 28.2	10.322
23	11 52 14.13	2.0780	N. 1 9 9.0	10.314

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 54 18.72	2.0749	N. 0 58 50.4	10.306
1	11 56 23.12	2.0719	0 48 32.4	10.296
2	11 58 27.34	2.0689	0 38 15.0	10.284
3	12 0 31.39	2.0660	0 27 58.2	10.273
4	12 2 35.26	2.0631	0 17 42.2	10.261
5	12 4 38.96	2.0602	N. 0 7 26.9	10.248
6	12 6 42.49	2.0574	S. 0 2 47.5	10.234
7	12 8 45.85	2.0547	0 13 1.1	10.219
8	12 10 49.05	2.0520	0 23 13.8	10.204
9	12 12 52.09	2.0494	0 33 25.6	10.188
10	12 14 54.98	2.0468	0 43 36.4	10.171
11	12 16 57.71	2.0442	0 53 46.1	10.153
12	12 19 0.29	2.0417	1 3 54.8	10.135
13	12 21 2.72	2.0393	1 14 2.3	10.116
14	12 23 5.01	2.0369	1 24 8.7	10.096
15	12 25 7.15	2.0346	1 34 13.9	10.076
16	12 27 9.16	2.0323	1 44 17.8	10.055
17	12 29 11.03	2.0300	1 54 20.5	10.033
18	12 31 12.76	2.0278	2 4 21.8	10.011
19	12 33 14.37	2.0257	2 14 21.8	9.988
20	12 35 15.84	2.0236	2 24 20.3	9.964
21	12 37 17.19	2.0215	2 34 17.4	9.939
22	12 39 18.42	2.0196	2 44 13.0	9.914
23	12 41 19.53	2.0176	2 54 7.1	9.888
24	12 43 20.53	2.0157	S. 3 3 59.7	9.862

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ' "	"
0	12 43 20.53	2.0155	S. 3 3 59.7	9.862
1	12 45 21.41	2.0137	3 13 50.6	9.835
2	12 47 22.18	2.0119	3 23 39.9	9.808
3	12 49 22.84	2.0102	3 33 27.5	9.780
4	12 51 23.40	2.0085	3 43 13.4	9.751
5	12 53 23.86	2.0068	3 52 57.6	9.721
6	12 55 24.21	2.0051	4 2 40.0	9.691
7	12 57 24.47	2.0036	4 12 20.6	9.661
8	12 59 24.64	2.0021	4 21 59.3	9.630
9	13 1 24.72	2.0006	4 31 36.1	9.598
10	13 3 24.71	1.9991	4 41 11.0	9.566
11	13 5 24.61	1.9977	4 50 44.0	9.533
12	13 7 24.43	1.9963	5 0 15.0	9.499
13	13 9 24.17	1.9950	5 9 44.0	9.465
14	13 11 23.83	1.9938	5 19 10.9	9.431
15	13 13 23.43	1.9926	5 28 35.7	9.396
16	13 15 22.95	1.9914	5 37 58.4	9.360
17	13 17 22.40	1.9903	5 47 18.9	9.324
18	13 19 21.78	1.9892	5 56 37.4	9.287
19	13 21 21.10	1.9882	6 5 53.5	9.250
20	13 23 20.36	1.9872	6 15 7.4	9.212
21	13 25 19.56	1.9862	6 24 19.0	9.174
22	13 27 18.71	1.9853	6 33 28.3	9.135
23	13 29 17.80	1.9844	S. 6 42 35.2	9.096

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 31 16.84	1.9836	S. 6 51 39.7	9.056
1	13 33 15.83	1.9828	7 0 41.9	9.016
2	13 35 14.78	1.9822	7 9 41.7	8.976
3	13 37 13.69	1.9815	7 18 39.0	8.934
4	13 39 12.56	1.9808	7 27 33.8	8.892
5	13 41 11.39	1.9802	7 36 26.1	8.850
6	13 43 10.18	1.9796	7 45 15.8	8.808
7	13 45 8.94	1.9791	7 54 3.0	8.765
8	13 47 7.67	1.9786	8 2 47.6	8.721
9	13 49 6.37	1.9782	8 11 29.5	8.677
10	13 51 5.05	1.9778	8 20 8.8	8.632
11	13 53 3.70	1.9774	8 28 45.4	8.587
12	13 55 2.33	1.9770	8 37 19.2	8.542
13	13 57 0.94	1.9768	8 45 50.3	8.496
14	13 58 59.54	1.9766	8 54 18.7	8.449
15	14 0 58.13	1.9763	9 2 44.3	8.402
16	14 2 56.70	1.9761	9 11 7.0	8.355
17	14 4 55.26	1.9760	9 19 26.9	8.307
18	14 6 53.81	1.9760	9 27 43.9	8.259
19	14 8 52.37	1.9760	9 35 58.0	8.211
20	14 10 50.92	1.9759	9 44 9.2	8.163
21	14 12 49.47	1.9759	9 52 17.4	8.112
22	14 14 48.02	1.9759	10 0 22.6	8.062
23	14 16 46.57	1.9760	10 8 24.8	8.012
24	14 18 45.13	1.9761	S. 10 16 24.0	7.961

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ' "	"
0	14 18 45.13	1.9761	S. 10 16 24.0	7.961
1	14 20 43.70	1.9762	10 24 20.1	7.910
2	14 22 42.28	1.9764	10 32 13.1	7.858
3	14 24 40.87	1.9766	10 40 3.1	7.806
4	14 26 39.47	1.9768	10 47 49.9	7.753
5	14 28 38.09	1.9772	10 55 33.5	7.701
6	14 30 36.73	1.9776	11 3 13.9	7.647
7	14 32 35.40	1.9779	11 10 51.2	7.594
8	14 34 34.08	1.9782	11 18 25.2	7.540
9	14 36 32.78	1.9786	11 25 55.9	7.485
10	14 38 31.51	1.9791	11 33 23.4	7.430
11	14 40 30.27	1.9796	11 40 47.6	7.375
12	14 42 29.06	1.9801	11 48 8.5	7.319
13	14 44 27.88	1.9806	11 55 26.0	7.263
14	14 46 26.73	1.9812	12 2 40.1	7.207
15	14 48 25.62	1.9817	12 9 50.8	7.150
16	14 50 24.54	1.9823	12 16 58.1	7.093
17	14 52 23.50	1.9830	12 24 1.9	7.035
18	14 54 22.50	1.9837	12 31 2.2	6.977
19	14 56 21.55	1.9844	12 37 59.1	6.918
20	14 58 20.63	1.9851	12 44 52.4	6.859
21	15 0 19.76	1.9859	12 51 42.2	6.800
22	15 2 18.94	1.9867	12 58 28.4	6.740
23	15 4 18.16	1.9875	S. 13 5 11.0	6.680

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 6 17.44	1.9884	S. 13 11 50.1	6.620
1	15 8 16.77	1.9892	13 18 25.5	6.560
2	15 10 16.14	1.9900	13 24 57.2	6.498
3	15 12 15.57	1.9910	13 31 25.2	6.436
4	15 14 15.06	1.9919	13 37 49.5	6.374
5	15 16 14.60	1.9928	13 44 10.1	6.312
6	15 18 14.20	1.9938	13 50 26.9	6.249
7	15 20 13.86	1.9948	13 56 40.0	6.186
8	15 22 13.58	1.9958	14 2 49.3	6.122
9	15 24 13.36	1.9968	14 8 54.8	6.058
10	15 26 13.20	1.9979	14 14 56.4	5.994
11	15 28 13.11	1.9990	14 20 54.2	5.930
12	15 30 13.08	2.0000	14 26 48.1	5.866
13	15 32 13.11	2.0012	14 32 38.1	5.800
14	15 34 13.22	2.0023	14 38 24.2	5.735
15	15 36 13.39	2.0034	14 44 6.3	5.668
16	15 38 13.63	2.0046	14 49 44.4	5.602
17	15 40 13.94	2.0057	14 55 18.5	5.535
18	15 42 14.32	2.0069	15 0 48.6	5.468
19	15 44 14.77	2.0081	15 6 14.7	5.401
20	15 46 15.29	2.0093	15 11 36.7	5.333
21	15 48 15.89	2.0106	15 16 54.7	5.265
22	15 50 16.56	2.0118	15 22 8.6	5.197
23	15 52 17.31	2.0131	15 27 18.3	5.128
24	15 54 18.13	2.0143	S. 15 32 23.9	5.059

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 54 18.13	2.0143	S. 15 32 23.9	5.056
1	15 56 19.03	2.0156	15 37 25.3	4.989
2	15 58 20.00	2.0169	15 42 22.5	4.919
3	16 0 21.06	2.0182	15 47 15.6	4.849
4	16 2 22.19	2.0195	15 52 4.4	4.778
5	16 4 23.40	2.0208	15 56 49.0	4.707
6	16 6 24.69	2.0222	16 1 29.3	4.636
7	16 8 26.06	2.0235	16 6 5.3	4.565
8	16 10 27.51	2.0248	16 10 37.1	4.493
9	16 12 29.04	2.0262	16 15 4.5	4.421
10	16 14 30.66	2.0276	16 19 27.6	4.348
11	16 16 32.35	2.0289	16 23 46.3	4.275
12	16 18 34.13	2.0303	16 28 0.6	4.202
13	16 20 35.99	2.0317	16 32 10.5	4.129
14	16 22 37.93	2.0331	16 36 16.0	4.055
15	16 24 39.96	2.0345	16 40 17.1	3.980
16	16 26 42.07	2.0358	16 44 13.7	3.906
17	16 28 44.26	2.0372	16 48 5.8	3.831
18	16 30 46.53	2.0386	16 51 53.4	3.756
19	16 32 48.89	2.0400	16 55 36.5	3.681
20	16 34 51.33	2.0414	16 59 15.1	3.605
21	16 36 53.86	2.0428	17 2 49.1	3.529
22	16 38 56.47	2.0442	17 6 18.5	3.452
23	16 40 59.16	2.0456	S. 17 9 43.4	3.376

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 43 1.94	2.0470	S. 17 13 3.7	3.299
1	16 45 4.80	2.0483	17 16 19.3	3.222
2	16 47 7.74	2.0497	17 19 30.3	3.144
3	16 49 10.77	2.0511	17 22 36.6	3.066
4	16 51 13.88	2.0525	17 25 38.2	2.988
5	16 53 17.07	2.0539	17 28 35.2	2.910
6	16 55 20.35	2.0553	17 31 27.4	2.831
7	16 57 23.71	2.0567	17 34 14.9	2.752
8	16 59 27.15	2.0580	17 36 57.7	2.673
9	17 1 30.67	2.0593	17 39 35.7	2.594
10	17 3 34.27	2.0607	17 42 8.9	2.514
11	17 5 37.95	2.0621	17 44 37.4	2.434
12	17 7 41.72	2.0634	17 47 1.1	2.354
13	17 9 45.56	2.0647	17 49 19.9	2.273
14	17 11 49.49	2.0661	17 51 33.9	2.193
15	17 13 53.49	2.0674	17 53 43.0	2.112
16	17 15 57.58	2.0687	17 55 47.3	2.031
17	17 18 1.74	2.0700	17 57 46.7	1.949
18	17 20 5.98	2.0713	17 59 41.2	1.867
19	17 22 10.29	2.0725	18 1 30.8	1.786
20	17 24 14.68	2.0738	18 3 15.5	1.704
21	17 26 19.15	2.0751	18 4 55.3	1.621
22	17 28 23.69	2.0763	18 6 30.1	1.539
23	17 30 28.30	2.0775	18 7 59.9	1.456
24	17 32 32.99	2.0787	S. 18 9 24.8	1.373

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 32 32.99	2.0787	S. 18 9 24.8	1.373
1	17 34 37.75	2.0799	18 10 44.7	1.290
2	17 36 42.58	2.0811	18 11 59.6	1.206
3	17 38 47.48	2.0822	18 13 9.5	1.123
4	17 40 52.45	2.0834	18 14 14.3	1.039
5	17 42 57.49	2.0846	18 15 14.1	0.955
6	17 45 2.60	2.0857	18 16 8.9	0.871
7	17 47 7.78	2.0868	18 16 58.6	0.787
8	17 49 13.02	2.0879	18 17 43.3	0.702
9	17 51 18.33	2.0890	18 18 22.9	0.618
10	17 53 23.70	2.0900	18 18 57.4	0.533
11	17 55 29.13	2.0911	18 19 26.9	0.448
12	17 57 34.63	2.0921	18 19 51.2	0.363
13	17 59 40.19	2.0931	18 20 10.4	0.278
14	18 1 45.80	2.0941	18 20 24.5	0.193
15	18 3 61.48	2.0951	18 20 33.5	0.107
16	18 5 57.22	2.0961	18 20 37.4	0.021
17	18 8 3.01	2.0969	18 20 36.1	0.064
18	18 10 8.85	2.0978	18 20 29.7	0.150
19	18 12 14.75	2.0988	18 20 18.1	0.236
20	18 14 20.71	2.0997	18 20 1.4	0.322
21	18 16 26.71	2.1005	18 19 39.5	0.408
22	18 18 32.77	2.1013	18 19 12.4	0.494
23	18 20 38.87	2.1022	S. 18 18 40.1	0.580

FRIDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 22 45.03	2.1030	S. 18 18 2.7	0.667

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	5	12	29.9
☽ First Quarter, . .	13	4	34.0
○ Full Moon, . . .	19	19	35.9
☾ Last Quarter, . .	27	2	47.3

	d	h
☾ Apogee, ...	2	8.1
☾ Perigee, ...	18	2.3
☾ Apogee, ...	29	23.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Regulus	W.	83° 23′ 32″	3083	84° 52′ 2″	3085	86° 20′ 30″	3087	87° 48′ 56″	3087
	Spica	W.	30 1 18	3122	31 29 2	3120	32 56 47	3119	34 24 34	3117
	Sun	E.	49 23 52	3496	48 3 26	3501	46 43 3	3504	45 22 44	3507
2	Regulus	W.	95 10 53	3088	96 39 16	3088	98 7 41	3087	99 36 6	3086
	Spica	W.	41 43 59	3108	43 11 59	3106	44 40 1	3104	46 8 6	3101
	Sun	E.	38 41 46	3517	37 21 41	3519	36 1 38	3521	34 41 36	3523
3	Regulus	W.	106 58 43	3076	108 27 23	3073	109 56 5	3069	111 24 51	3065
	Spica	W.	53 29 17	3087	54 57 42	3083	56 26 12	3080	57 54 46	3077
	Sun	E.	28 2 2	3536	26 42 15	3539	25 22 34	3544	24 2 58	3549
7	Sun	W.	17 0 16	3449	18 21 37	3419	19 43 32	3393	21 5 57	3370
	a Arietis	E.	91 44 41	3021	90 14 54	3014	88 44 59	3007	87 14 55	3001
8	Sun	W.	28 3 47	3283	29 28 18	3270	30 53 5	3257	32 18 7	3243
	a Arietis	E.	79 42 29	2947	78 11 35	2961	76 40 33	2955	75 9 24	2949
	Aldebaran	E.	112 25 55	2848	110 52 29	2839	109 18 52	2831	107 45 5	2824
9	Sun	W.	39 27 0	3183	40 53 29	3173	42 20 11	3161	43 47 7	3149
	a Arietis	E.	67 31 46	2920	65 59 53	2916	64 27 53	2910	62 55 48	2905
	Aldebaran	E.	99 53 32	2782	98 18 41	2774	96 43 37	2766	95 8 25	2758
10	Sun	W.	51 5 13	3092	52 33 32	3081	54 2 5	3069	55 30 52	3056
	a Arietis	E.	55 13 59	2887	53 41 24	2885	52 8 46	2884	50 36 7	2883
	Aldebaran	E.	87 9 16	2710	85 32 49	2700	83 56 8	2689	82 19 15	2680
11	Sun	W.	62 58 28	2997	64 28 44	2985	65 59 16	2972	67 30 4	2960
	Fomalhaut	W.	30 7 59	4670	31 10 50	4378	32 16 31	4208	33 24 48	4080
	a Arietis	E.	42 53 1	2896	41 20 36	2902	39 48 20	2912	38 16 16	2924
	Aldebaran	E.	74 11 19	2627	72 33 1	2616	70 54 28	2605	69 15 40	2594
	Mars	E.	116 8 30	2556	114 28 36	2545	112 48 26	2533	111 7 59	2521
	Pollux	E.	117 19 45	2732	115 43 48	2719	114 7 33	2705	112 30 59	2692
12	Sun	W.	75 8 3	2893	76 40 29	2881	78 13 12	2868	79 46 12	2856
	Fomalhaut	W.	39 38 4	3529	40 57 57	3452	42 19 15	3381	43 41 53	3316
	Aldebaran	E.	60 57 45	2535	59 17 21	2523	57 36 40	2511	55 55 43	2499
	Mars	E.	102 41 31	2460	100 59 22	2448	99 16 56	2436	97 34 13	2424
	Pollux	E.	104 23 41	2624	102 45 20	2611	101 6 40	2598	99 27 42	2586
13	Sun	W.	87 35 36	2786	89 10 23	2772	90 45 28	2758	92 20 51	2744
	Fomalhaut	W.	50 52 3	3090	52 21 1	3020	53 50 49	2961	55 21 25	2906
	a Pegasi	W.	35 36 52	3214	37 2 44	3143	38 30 1	3078	39 58 37	3018
	Aldebaran	E.	47 26 33	2436	45 43 50	2424	44 0 49	2411	42 17 29	2398
	Mars	E.	88 56 17	2364	87 11 50	2351	85 27 5	2339	83 42 3	2326
	Pollux	E.	91 8 22	2520	89 27 36	2507	87 46 33	2494	86 5 12	2482
14	Sun	W.	100 22 25	2674	101 59 39	2660	103 37 12	2647	105 15 3	2634
	Fomalhaut	W.	63 5 8	2792	64 39 46	2766	66 14 59	2741	67 50 44	2716
	a Pegasi	W.	47 38 16	2788	49 13 0	2752	50 48 31	2718	52 24 47	2687
	Aldebaran	E.	33 36 15	2334	31 51 5	2321	30 5 36	2309	28 19 48	2296
	Mars	E.	74 52 32	2269	73 5 47	2258	71 18 46	2247	69 31 29	2237
	Pollux	E.	77 34 7	2422	75 51 3	2410	74 7 43	2399	72 24 7	2388
	Regulus	E.	113 40 1	2339	111 54 58	2326	110 9 36	2313	108 23 56	2300

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Regulus	W.	89° 17′ 20″	3066	90° 45′ 44″	3069	92° 14′ 7″	3069	93° 42′ 30″	3069
	Spica	W.	35 52 23	3116	37 20 14	3114	38 48 7	3112	40 16 2	3110
	Sun	E.	44 2 28	3509	42 42 14	3512	41 22 3	3514	40 1 53	3516
2	Regulus	W.	101 4 33	3084	102 33 2	3082	104 1 33	3080	105 30 7	3078
	Spica	W.	47 36 14	3099	49 4 24	3096	50 32 38	3094	52 0 56	3091
	Sun	E.	33 21 37	3525	32 1 40	3526	30 41 45	3528	29 21 52	3531
3	Regulus	W.	112 53 41	3064	114 22 35	3060	115 51 34	3056	117 20 37	3052
	Spica	W.	59 23 24	3073	60 52 6	3069	62 20 54	3065	63 49 47	3060
	Sun	E.	22 43 27	3557	21 24 5	3568	20 4 56	3581	18 46 1	3595
7	Sun	W.	22 28 48	3350	23 52 2	3331	25 15 38	3314	26 39 33	3298
	a Arietis	E.	85 44 42	2993	84 14 21	2987	82 43 52	2981	81 13 15	2793
8	Sun	W.	33 43 25	3231	35 8 58	3219	36 34 44	3207	38 0 45	3195
	a Arietis	E.	73 38 7	2943	72 6 43	2937	70 35 11	2931	69 3 32	2926
	Aldebaran	E.	106 11 8	2816	104 37 0	2808	103 2 41	2799	101 28 12	2791
9	Sun	W.	45 14 17	3138	46 41 40	3127	48 9 17	3115	49 37 8	3104
	a Arietis	E.	61 23 36	2901	59 51 19	2898	58 18 57	2894	56 46 30	2891
	Aldebaran	E.	93 32 59	2747	91 57 22	2738	90 21 32	2729	88 45 30	2719
10	Sun	W.	56 59 54	3046	58 29 10	3034	59 58 41	3022	61 28 27	3009
	a Arietis	E.	49 3 27	2883	47 30 46	2884	45 58 7	2887	44 25 32	2891
	Aldebaran	E.	80 42 8	2669	79 4 47	2659	77 27 12	2649	75 49 23	2638
11	Sun	W.	69 1 8	2946	70 32 27	2934	72 4 3	2921	73 35 55	2909
	Fomalhaut	W.	34 35 29	3928	35 48 20	3813	37 3 9	3709	38 19 46	3597
	a Arietis	E.	36 44 27	2960	35 12 59	2968	33 41 54	2984	32 11 18	3012
	Aldebaran	E.	67 36 37	2583	65 57 18	2571	64 17 43	2560	62 37 52	2548
	Mars	E.	109 27 15	2509	107 46 15	2497	106 4 57	2485	104 23 22	2472
	Pollux	E.	110 54 8	2676	109 16 58	2664	107 39 31	2651	106 1 45	2638
12	Sun	W.	81 19 29	2841	82 53 3	2827	84 26 56	2813	86 1 7	2799
	Fomalhaut	W.	45 5 44	3257	46 30 46	3203	47 56 52	3153	49 23 58	3106
	Aldebaran	E.	54 14 28	2487	52 32 56	2474	50 51 6	2462	49 8 58	2449
	Mars	E.	95 51 12	2413	94 7 55	2400	92 24 20	2388	90 40 27	2375
	Pollux	E.	97 48 26	2572	96 8 52	2559	94 29 0	2546	92 48 50	2533
13	Sun	W.	93 56 33	2730	95 32 33	2716	97 8 52	2702	98 45 29	2688
	Fomalhaut	W.	56 52 47	2911	58 24 52	2879	59 57 39	2848	61 31 5	2819
	a Pegasi	W.	41 28 27	2964	42 59 25	2915	44 31 25	2869	46 4 23	2828
	Aldebaran	E.	40 33 51	2385	38 49 55	2372	37 5 40	2359	35 21 7	2346
	Mars	E.	81 56 44	2316	80 11 6	2304	78 25 12	2292	76 39 1	2281
	Pollux	E.	84 23 33	2470	82 41 37	2458	80 59 24	2445	79 16 54	2433
14	Sun	W.	106 53 12	2621	108 31 40	2607	110 10 25	2594	111 49 28	2581
	Fomalhaut	W.	69 27 0	2695	71 3 46	2675	72 41 1	2655	74 18 42	2635
	a Pegasi	W.	54 1 45	2657	55 39 22	2629	57 17 40	2602	58 56 30	2577
	Aldebaran	E.	26 33 42	2283	24 47 19	2271	23 0 37	2259	21 13 37	2247
	Mars	E.	67 43 55	2226	65 56 5	2216	64 8 1	2206	62 19 43	2196
	Pollux	E.	70 40 16	2378	68 56 10	2366	67 11 49	2355	65 27 14	2343
	Regulus	E.	106 37 57	2286	104 51 39	2275	103 5 4	2263	101 18 10	2251

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Sun	W.	113° 28′ 49″	2569	115° 8′ 27″	2557	116° 48′ 21″	2545	118° 28′ 32″	2533
	Fomalhaut	W.	75 56 49	2618	77 35 20	2601	79 14 14	2585	80 53 30	2569
	α Pegasi	W.	60 35 56	2554	62 15 54	2533	63 56 22	2512	65 37 20	2492
	Mars	E.	60 31 12	2188	58 42 27	2180	56 53 29	2172	55 4 20	2165
	Pollux	E.	63 42 26	2340	61 57 25	2333	60 12 13	2325	58 26 50	2318
	Regulus	E.	99 30 58	2239	97 43 28	2227	95 55 41	2216	94 7 37	2204
16	Sun	W.	126 53 19	2481	128 34 59	2472	130 16 52	2464	131 58 56	2456
	Fomalhaut	W.	89 14 35	2510	90 55 35	2501	92 36 47	2493	94 18 10	2485
	α Pegasi	W.	74 8 29	2410	75 51 50	2396	77 35 30	2384	79 19 27	2373
	Mars	E.	45 56 16	2143	44 6 21	2141	42 16 25	2141	40 26 29	2142
	Pollux	E.	49 37 53	2299	47 51 52	2299	46 5 51	2300	44 19 51	2306
	Regulus	E.	85 3 13	2153	83 13 35	2144	81 23 43	2136	79 33 37	2127
17	α Pegasi	W.	88 2 52	2331	89 48 7	2325	91 33 30	2321	93 19 0	2317
	α Arietis	W.	44 24 47	2326	46 10 10	2306	47 56 2	2287	49 42 20	2272
	Pollux	E.	35 32 11	2358	33 47 35	2380	32 3 31	2408	30 20 7	2443
	Regulus	E.	70 20 14	2092	68 29 3	2087	66 37 44	2083	64 46 19	2079
18	α Arietis	W.	58 38 44	2219	60 26 43	2213	62 14 51	2208	64 3 7	2204
	Aldebaran	W.	24 41 16	2061	26 33 15	2061	28 25 15	2061	30 17 15	2061
	Regulus	E.	55 27 55	2068	53 36 6	2068	51 44 17	2068	49 52 29	2069
	Spica	E.	108 59 0	2074	107 7 22	2073	105 15 41	2073	103 24 0	2074
19	α Arietis	W.	73 5 20	2201	74 53 46	2204	76 42 8	2207	78 30 24	2212
	Aldebaran	W.	39 36 39	2075	41 28 17	2079	43 19 48	2085	45 11 11	2090
	Regulus	E.	40 34 17	2086	38 42 57	2092	36 51 46	2099	35 0 45	2107
	Spica	E.	94 6 8	2086	92 14 48	2091	90 23 35	2097	88 32 31	2103
20	α Arietis	W.	87 29 39	2248	89 16 55	2259	91 3 55	2268	92 50 42	2281
	Aldebaran	W.	54 25 25	2131	56 15 37	2141	58 5 34	2151	59 55 16	2162
	Mars	W.	17 54 28	2600	19 33 24	2518	21 14 12	2453	22 56 31	2406
	Spica	E.	79 19 51	2144	77 29 58	2154	75 40 21	2165	73 51 0	2176
	Saturn	E.	110 10 9	2154	108 20 32	2164	106 31 10	2174	104 42 3	2185
21	α Arietis	W.	101 39 56	2349	103 24 45	2365	105 9 10	2382	106 53 11	2399
	Aldebaran	W.	68 59 17	2225	70 47 7	2239	72 34 36	2253	74 21 44	2269
	Mars	W.	31 40 3	2309	33 25 49	2306	35 11 39	2306	36 57 30	2309
	Pollux	W.	27 28 54	2626	29 7 15	2597	30 46 14	2577	32 25 40	2560
	Spica	E.	64 48 44	2241	63 1 17	2256	61 14 12	2270	59 27 29	2286
	Saturn	E.	95 40 55	2248	93 53 39	2263	92 6 44	2277	90 20 11	2291
	Venus	E.	122 4 35	2431	121 21 29	2436	119 38 47	2453	117 56 26	2469
22	Aldebaran	W.	83 11 40	2349	84 56 28	2366	86 40 52	2383	88 24 51	2401
	Mars	W.	45 45 0	2346	47 29 52	2358	49 14 27	2370	50 58 45	2383
	Pollux	W.	40 46 9	2544	42 26 21	2548	44 6 27	2554	45 46 25	2562
	Spica	E.	50 39 52	2371	48 55 35	2389	47 11 44	2407	45 28 19	2426
	Saturn	E.	81 33 3	2372	79 48 48	2390	78 4 58	2406	76 21 32	2424
	Antares	E.	96 25 38	2408	94 42 15	2425	92 59 16	2442	91 16 41	2460
	Venus	E.	108 30 44	2557	106 50 50	2576	105 11 22	2594	103 32 19	2613
23	Aldebaran	W.	96 58 30	2490	98 39 58	2508	100 21 0	2526	102 1 37	2544
	Mars	W.	59 35 23	2455	61 17 39	2471	62 59 32	2487	64 41 3	2504
	Pollux	W.	54 3 3	2617	55 41 35	2630	57 19 50	2643	58 57 46	2657
	Spica	E.	36 58 9	2527	35 17 33	2548	33 37 26	2570	31 57 50	2593

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Sun	W.	120° 8′ 59″	2522	121° 49′ 42″	2511	123° 30′ 40″	2501	125° 11′ 52″	2491
	Fomalhaut	W.	82 33 7	2566	84 13 4	2548	85 53 18	2530	87 33 49	2520
	α Pegasi	W.	67 18 45	2474	69 0 34	2456	70 42 49	2439	72 25 28	2424
	Mars	E.	53 15 1	2160	51 25 31	2158	49 35 53	2149	47 46 8	2145
	Pollux	E.	56 41 17	2313	54 55 35	2307	53 9 46	2304	51 23 52	2300
	Regulus	E.	92 19 16	2194	90 30 38	2188	88 41 45	2172	86 52 36	2163
16	Sun	W.	133 41 12	2448	135 23 38	2441	137 6 13	2436	138 48 57	2431
	Fomalhaut	W.	95 59 42	2481	97 41 22	2477	99 23 9	2474	101 4 59	2472
	α Pegasi	W.	81 3 41	2362	82 48 10	2353	84 32 52	2344	86 17 47	2337
	Mars	E	38 36 34	2148	36 46 46	2154	34 57 9	2163	33 7 46	2174
	Pollux	E.	42 33 56	2307	40 48 8	2315	39 2 31	2327	37 17 10	2342
	Regulus	E.	77 43 19	2119	75 52 49	2112	74 2 7	2105	72 11 15	2096
17	α Pegasi	W.	95 4 35	2314	96 50 13	2312	98 35 55	2313	100 21 37	2316
	α Arietis	W.	51 29 2	2256	53 16 3	2246	55 3 22	2236	56 50 56	2227
	Pollux	E.	28 37 33	2486	26 56 0	2540	25 15 42	2607	23 36 57	2669
	Regulus	E.	62 54 47	2075	61 3 9	2072	59 11 27	2070	57 19 42	2069
18	α Arietis	W.	65 51 29	2201	67 39 55	2200	69 28 23	2199	71 16 52	2200
	Aldebaran	W.	32 9 13	2062	34 1 10	2064	35 53 4	2067	37 44 54	2070
	Regulus	E.	48 0 42	2071	46 8 59	2074	44 17 19	2077	42 25 45	2081
	Spica	E.	101 32 20	2075	99 40 42	2076	97 49 6	2080	95 57 35	2083
19	α Arietis	W.	80 18 34	2217	82 6 36	2224	83 54 28	2231	85 42 9	2238
	Aldebaran	W.	47 2 24	2098	48 53 27	2105	50 44 19	2113	52 34 59	2122
	Regulus	E.	33 9 55	2115	31 19 19	2124	29 28 57	2135	27 38 51	2146
	Spica	E.	86 41 36	2110	84 50 52	2117	83 0 19	2125	81 9 58	2134
20	α Arietis	W.	94 37 11	2292	96 23 22	2306	98 9 13	2319	99 54 45	2333
	Aldebaran	W.	61 44 41	2174	63 33 48	2186	65 22 37	2198	67 11 7	2212
	Mars	W.	24 39 59	2371	26 24 16	2346	28 9 9	2328	29 54 28	2317
	Spica	E.	72 1 55	2188	70 13 9	2200	68 24 41	2213	66 36 32	2227
	Saturn	E.	102 53 13	2196	101 4 41	2208	99 16 27	2221	97 28 31	2236
21	α Arietis	W.	108 36 47	2417	110 19 58	2436	112 2 41	2456	113 44 56	2477
	Aldebaran	W.	76 8 29	2284	77 54 52	2300	79 40 51	2316	81 26 28	2333
	Mars	W.	38 43 17	2313	40 28 58	2319	42 14 31	2326	43 59 52	2335
	Pollux	W.	34 5 27	2653	35 45 28	2646	37 25 38	2642	39 5 53	2641
	Spica	E.	57 41 9	2302	55 55 13	2319	54 9 41	2336	52 24 34	2353
	Saturn	E.	88 33 59	2307	86 48 10	2323	85 2 44	2339	83 17 42	2356
	Venus	E.	115 14 29	2486	113 32 56	2504	111 51 48	2521	110 11 4	2539
22	Aldebaran	W.	90 8 25	2418	91 51 34	2436	93 34 18	2453	95 16 37	2472
	Mars	W.	52 42 45	2396	54 26 25	2410	56 9 45	2425	57 52 45	2440
	Pollux	W.	47 26 12	2672	49 5 46	2681	50 45 7	2692	52 24 13	2704
	Spica	E.	43 45 21	2445	42 2 51	2465	40 20 48	2485	38 39 14	2506
	Saturn	E.	74 38 31	2441	72 55 56	2460	71 13 46	2477	69 32 1	2496
	Antares	E.	89 34 30	2477	87 52 45	2495	86 11 25	2513	84 30 30	2532
	Venus	E.	101 53 42	2633	100 15 32	2652	98 37 48	2672	97 0 30	2693
23	Aldebaran	W.	103 41 49	2563	105 21 35	2580	107 0 57	2599	108 39 54	2617
	Mars	W.	66 22 11	2520	68 2 56	2537	69 43 18	2553	71 23 17	2570
	Pollux	W.	60 35 23	2672	62 12 40	2687	63 49 37	2702	65 26 14	2717
	Spica	E.	30 18 44	2616	28 40 11	2640	27 2 11	2665	25 24 44	2690

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Saturn	E.	67° 50′ 41″	2514	66° 9′ 47″	2532	64° 29′ 18″	2551	62° 49′ 15″	2569
	Antares	E.	82 50 1	2551	81 9 58	2569	79 30 20	2588	77 51 8	2607
	Venus	E.	95 23 39	2712	93 47 15	2732	92 11 17	2752	90 35 46	2772
	Sun	E.	138 2 34	2854	136 29 16	2872	134 56 21	2891	133 23 50	2909
24	Aldebaran	W.	110 18 26	2635	111 56 34	2652	113 34 18	2670	115 11 39	2687
	Mars	W.	73 2 53	2588	74 42 6	2604	76 20 55	2621	77 59 22	2638
	Pollux	W.	67 2 31	2733	68 38 27	2748	70 14 3	2764	71 49 18	2779
	Regulus	W.	30 19 3	2653	31 56 47	2669	33 34 8	2685	35 11 8	2701
	Saturn	E.	54 35 15	2660	52 57 41	2678	51 20 31	2695	49 43 45	2713
	Antares	E.	69 41 39	2703	68 5 3	2722	66 28 53	2741	64 53 8	2761
	Venus	E.	82 44 40	2871	81 11 44	2891	79 39 13	2910	78 7 6	2929
	Sun	E.	125 47 7	3002	124 16 57	3021	122 47 10	3039	121 17 46	3057
25	Mars	W.	86 5 59	2719	87 42 13	2735	89 18 6	2751	90 53 38	2766
	Pollux	W.	79 40 27	2858	81 13 40	2873	82 46 34	2887	84 19 9	2902
	Regulus	W.	43 10 44	2782	44 45 36	2797	46 20 9	2811	47 54 21	2827
	Saturn	E.	41 45 44	2799	40 11 15	2815	38 37 7	2831	37 3 20	2848
	Antares	E.	57 0 45	2858	55 27 31	2877	53 54 43	2896	52 22 19	2916
	Venus	E.	70 32 32	3022	69 2 46	3039	67 33 22	3057	66 4 20	3074
	Sun	E.	113 56 18	3146	112 29 4	3163	111 2 11	3180	109 35 38	3196
26	Mars	W.	98 46 21	2840	100 19 57	2854	101 53 15	2867	103 26 16	2880
	Pollux	W.	91 57 23	2973	93 28 9	2987	94 58 38	3000	96 28 51	3013
	Regulus	W.	55 40 45	2896	57 13 9	2909	58 45 16	2921	60 17 8	2934
	Saturn	E.	29 19 27	2924	27 47 38	2938	26 16 7	2953	24 44 55	2967
	Antares	E.	44 46 32	3014	43 16 37	3034	41 47 7	3056	40 18 3	3078
	Venus	E.	58 44 11	3153	57 17 7	3168	55 50 20	3183	54 23 50	3197
	Sun	E.	102 27 36	3273	101 2 52	3287	99 38 25	3300	98 14 14	3313
27	Pollux	W.	103 56 5	3072	105 24 49	3083	106 53 19	3094	108 21 36	3104
	Regulus	W.	67 52 47	2988	69 23 15	2997	70 53 32	3006	72 23 37	3014
	Antares	E.	32 59 38	3199	31 33 27	3228	30 7 51	3259	28 42 52	3294
	Venus	E.	47 15 17	3259	45 50 17	3270	44 25 31	3281	23 0 57	3290
	Sun	E.	91 16 58	3373	89 54 11	3384	88 31 36	3393	87 9 11	3402
28	Regulus	W.	79 51 37	3050	81 20 48	3056	82 49 51	3061	84 18 48	3066
	Spica	W.	26 34 31	3106	28 2 33	3107	29 30 34	3107	30 58 35	3108
	Venus	E.	36 0 49	3333	34 37 15	3340	33 13 50	3346	31 50 32	3352
	Sun	E.	80 19 36	3442	78 58 7	3448	77 36 44	3454	76 15 28	3460
29	Regulus	W.	91 42 19	3082	93 10 50	3086	94 39 18	3087	96 7 44	3087
	Spica	W.	38 18 30	3110	39 46 27	3110	41 14 24	3110	42 42 22	3110
	Sun	E.	69 30 25	3477	68 9 35	3480	66 48 48	3481	65 28 3	3483
30	Regulus	W.	103 29 48	3086	104 58 15	3086	106 26 44	3083	107 55 14	3081
	Spica	W.	50 2 26	3102	51 30 33	3100	52 58 43	3097	54 26 56	3094
	Saturn	W.	18 31 37	3129	19 59 11	3124	21 26 51	3119	22 54 37	3114
	Sun	E.	58 44 29	3482	57 23 44	3480	56 2 58	3479	54 42 10	3477
31	Spica	W.	61 49 6	3074	63 17 47	3069	64 46 34	3065	66 15 28	3060
	Saturn	W.	30 14 59	3089	31 43 22	3083	33 11 52	3078	34 40 29	3072
	Antares	W.	18 18 27	3706	19 35 9	3613	20 53 29	3537	22 13 13	3474
	Sun	E.	47 57 24	3461	46 36 14	3456	45 15 0	3451	43 53 40	3446

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Saturn	E.	61° 9′ 37″	2587	59° 30′ 24″	2605	57° 51′ 36″	2624	56° 13′ 13″	2642
	Antares	E.	76 12 22	2626	74 34 3	2645	72 56 9	2664	71 18 41	2684
	Venus	E.	89 0 41	2792	87 26 2	2811	85 51 49	2831	84 18 2	2851
	Sun	E.	131 51 42	2927	130 19 58	2946	128 48 38	2965	127 17 41	2984
24	Aldebaran	W.	116 48 36	2704	118 25 10	2722	120 1 21	2738	121 37 10	2755
	Mars	W.	79 37 26	2656	81 15 7	2671	82 52 26	2687	84 29 24	2704
	Pollux	W.	73 24 13	2795	74 58 47	2811	76 33 0	2826	78 6 54	2842
	Regulus	W.	36 47 46	2718	38 24 2	2734	39 59 57	2750	41 35 31	2766
	Saturn	E.	48 7 23	2731	46 31 25	2748	44 55 49	2765	43 20 35	2782
	Antares	E.	63 17 49	2780	61 42 55	2799	60 8 26	2819	58 34 23	2838
	Venus	E.	76 35 24	2948	75 4 6	2967	73 33 11	2985	72 2 40	3004
	Sun	E.	119 48 44	3076	118 20 5	3094	116 51 48	3111	115 23 52	3129
25	Mars	W.	92 28 50	2782	94 3 42	2797	95 38 14	2811	97 12 27	2826
	Pollux	W.	85 51 24	2917	87 23 21	2931	88 55 0	2946	90 26 20	2960
	Regulus	W.	49 28 15	2840	51 1 50	2855	52 35 6	2869	54 8 4	2883
	Saturn	E.	35 29 54	2863	33 56 48	2879	32 24 1	2894	30 51 34	2909
	Antares	E.	50 50 20	2935	49 18 46	2954	47 47 37	2974	46 16 52	2994
	Venus	E.	64 35 38	3091	63 7 17	3107	61 39 16	3123	60 11 34	3138
	Sun	E.	108 9 24	3212	106 43 29	3228	105 17 53	3243	103 52 36	3259
26	Mars	W.	104 59 0	2894	106 31 28	2906	108 3 39	2918	109 35 35	2930
	Pollux	W.	97 58 48	3026	99 28 29	3038	100 57 55	3049	102 27 7	3061
	Regulus	W.	61 48 44	2946	63 20 5	2957	64 51 13	2967	66 22 7	2977
	Saturn	E.	23 14 2	2981	21 43 26	2997	20 13 8	3011	18 43 9	3026
	Antares	E.	38 49 26	3100	37 21 15	3122	35 53 33	3147	34 26 20	3172
	Venus	E.	52 57 37	3210	51 31 40	3223	50 5 58	3236	48 40 30	3247
	Sun	E.	96 50 19	3326	95 26 38	3338	94 3 11	3351	92 39 58	3362
27	Pollux	W.	109 49 41	3114	111 17 34	3124	112 45 15	3133	114 12 45	3142
	Regulus	W.	73 53 32	3022	75 23 17	3030	76 52 52	3038	78 22 19	3044
	Antares	E.	27 18 34	3392	25 55 0	3377	24 32 17	3426	23 10 30	3484
	Venus	E.	41 36 34	3300	40 12 23	3309	38 48 22	3318	37 24 31	3326
	Sun	E.	85 46 57	3411	84 24 53	3420	83 2 59	3428	81 41 14	3435
28	Regulus	W.	85 47 40	3070	87 16 26	3074	88 45 7	3078	90 13 45	3080
	Spica	W.	32 26 35	3109	33 54 35	3109	35 22 34	3109	36 50 32	3110
	Venus	E.	30 27 21	3356	29 4 16	3363	27 41 17	3367	26 18 23	3371
	Sun	E.	74 54 18	3463	73 33 13	3468	72 12 13	3471	70 51 17	3474
29	Regulus	W.	97 36 10	3088	99 4 34	3088	100 32 59	3087	102 1 23	3087
	Spica	W.	44 10 20	3109	45 38 19	3108	47 6 20	3106	48 34 22	3105
	Sun	E.	64 7 19	3483	62 46 37	3484	61 25 55	3484	60 5 12	3483
30	Regulus	W.	109 23 48	3078	110 52 24	3075	112 21 4	3072	113 49 49	3068
	Spica	W.	55 55 13	3091	57 23 34	3087	58 52 0	3083	60 20 30	3079
	Saturn	W.	24 22 29	3110	25 50 27	3106	27 18 32	3099	28 46 42	3094
	Sun	E.	53 21 20	3474	52 0 26	3471	50 39 29	3467	49 18 29	3463
31	Spica	W.	67 44 28	3053	69 13 35	3047	70 42 50	3041	72 12 13	3034
	Saturn	W.	36 9 14	3065	37 38 6	3059	39 7 6	3052	40 36 15	3045
	Antares	W.	23 34 8	3419	24 56 3	3378	26 18 50	3332	27 42 24	3296
	Sun	E.	42 32 15	3440	41 10 44	3435	39 49 7	3429	38 27 23	3423

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	20 58 46.21	10.196	S. 17 8 27.2	42.60	16 16.02	68.29	13 50.11	0.339
Sat.	2	21 2 50.52	10.162	16 51 15.5	43.34	16 15.87	68.18	13 57.84	0.305
Sun.	3	21 6 54.01	10.128	16 33 46.2	44.07	16 15.71	68.06	14 4.75	0.271
Mon.	4	21 10 56.68	10.094	16 15 59.6	44.78	16 15.55	67.95	14 10.85	0.237
Tues.	5	21 14 58.52	10.060	15 57 56.0	45.48	16 15.38	67.83	14 16.13	0.203
Wed.	6	21 18 59.54	10.026	15 39 36.1	46.15	16 15.22	67.72	14 20.59	0.169
Thur.	7	21 22 59.75	9.992	15 21 0.4	46.81	16 15.05	67.60	14 24.23	0.135
Fri.	8	21 26 59.14	9.958	15 2 9.1	47.45	16 14.88	67.48	14 27.05	0.101
Sat.	9	21 30 57.72	9.925	14 43 2.7	48.06	16 14.70	67.37	14 29.07	0.068
Sun.	10	21 34 55.50	9.891	14 23 41.6	48.66	16 14.52	67.26	14 30.29	0.034
Mon.	11	21 38 52.47	9.858	14 4 6.2	49.25	16 14.34	67.15	14 30.71	0.001
Tues.	12	21 42 48.63	9.825	13 44 16.9	49.82	16 14.16	67.04	14 30.33	0.032
Wed.	13	21 46 44.01	9.793	13 24 14.0	50.37	16 13.97	66.93	14 29.17	0.064
Thur.	14	21 50 38.64	9.761	13 3 58.1	50.91	16 13.78	66.82	14 27.24	0.095
Fri.	15	21 54 32.51	9.730	12 43 29.7	51.43	16 13.58	66.72	14 24.56	0.126
Sat.	16	21 58 25.62	9.699	12 22 49.2	51.93	16 13.38	66.61	14 21.13	0.157
Sun.	17	22 2 18.00	9.669	12 1 57.0	52.42	16 13.18	66.51	14 16.98	0.187
Mon.	18	22 6 9.68	9.640	11 40 53.3	52.89	16 12.97	66.41	14 12.11	0.216
Tues.	19	22 10 0.66	9.611	11 19 38.4	53.34	16 12.75	66.31	14 6.54	0.244
Wed.	20	22 13 50.96	9.583	10 58 12.9	53.77	16 12.53	66.21	14 0.31	0.272
Thur.	21	22 17 40.59	9.556	10 36 37.3	54.19	16 12.31	66.12	13 53.42	0.300
Fri.	22	22 21 29.60	9.530	10 14 51.8	54.59	16 12.08	66.03	13 45.89	0.326
Sat.	23	22 25 17.99	9.505	9 52 56.9	54.98	16 11.85	65.94	13 37.75	0.351
Sun.	24	22 29 5.78	9.480	9 30 53.1	55.35	16 11.62	65.85	13 29.01	0.375
Mon.	25	22 32 52.98	9.456	9 8 40.6	55.70	16 11.38	65.76	13 19.68	0.399
Tues.	26	22 36 39.62	9.433	8 46 19.8	56.03	16 11.14	65.67	13 9.78	0.422
Wed.	27	22 40 25.70	9.411	8 23 51.1	56.35	16 10.89	65.59	12 59.34	0.445
Thur.	28	22 44 11.26	9.389	8 1 15.0	56.65	16 10.65	65.51	12 48.38	0.467
Fri.	29	22 47 56.31	9.368	S. 7 38 31.9	56.94	16 10.40	65.44	12 36.91	0.488

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	20 58 43.86	10.196	S. 17 8 37.0	42.60	13 50.03	0.339	20 44 53.83
Sat.	2	21 2 48.15	10.162	16 51 25.6	43.34	13 57.77	0.305	20 48 50.38
Sun.	3	21 6 51.63	10.128	16 33 56.5	44.07	14 4.69	0.271	20 52 46.94
Mon.	4	21 10 54.29	10.094	16 16 10.2	44.78	14 10.80	0.237	20 56 43.49
Tues.	5	21 14 56.12	10.060	15 58 6.9	45.48	14 16.07	0.203	21 0 40.05
Wed.	6	21 18 57.14	10.026	15 39 47.2	46.15	14 20.54	0.169	21 4 36.60
Thur.	7	21 22 57.35	9.992	15 21 11.6	46.81	14 24.20	0.135	21 8 33.15
Fri.	8	21 26 56.74	9.958	15 2 20.5	47.45	14 27.03	0.101	21 12 29.71
Sat.	9	21 30 55.32	9.925	14 43 14.3	48.06	14 29.06	0.068	21 16 26.26
Sun.	10	21 34 53.10	9.891	14 23 53.4	48.66	14 30.28	0.034	21 20 22.82
Mon.	11	21 38 50.09	9.858	14 4 18.2	49.25	14 30.72	0.001	21 24 19.37
Tues.	12	21 42 46.26	9.825	13 44 29.0	49.82	14 30.34	0.032	21 28 15.92
Wed.	13	21 46 41.65	9.793	13 24 26.2	50.37	14 29.17	0.064	21 32 12.48
Thur.	14	21 50 36.29	9.761	13 4 10.4	50.91	14 27.26	0.095	21 36 9.03
Fri.	15	21 54 30.17	9.730	12 43 42.1	51.43	14 24.59	0.126	21 40 5.58
Sat.	16	21 58 23.30	9.699	12 23 1.7	51.93	14 21.16	0.157	21 44 2.14
Sun.	17	22 2 15.70	9.669	12 2 9.5	52.22	14 17.01	0.187	21 47 58.69
Mon.	18	22 6 7.40	9.640	11 41 5.8	52.89	14 12.16	0.216	21 51 55.24
Tues.	19	22 9 58.40	9.611	11 19 51.0	53.34	14 6.60	0.244	21 55 51.80
Wed.	20	22 13 48.72	9.583	10 58 25.5	53.77	14 0.37	0.272	21 59 48.35
Thur.	21	22 17 38.38	9.556	10 36 49.9	54.19	13 53.48	0.300	22 3 44.90
Fri.	22	22 21 27.41	9.530	10 15 4.4	54.59	13 45.96	0.326	22 7 41.45
Sat.	23	22 25 15.83	9.505	9 53 9.5	54.98	13 37.82	0.351	22 11 38.01
Sun.	24	22 29 3.65	9.480	9 31 5.6	55.35	13 29.09	0.375	22 15 34.56
Mon.	25	22 32 50.88	9.456	9 8 53.0	55.70	13 19.77	0.399	22 19 31.11
Tues.	26	22 36 37.54	9.433	8 46 32.1	56.03	13 9.88	0.422	22 23 27.66
Wed.	27	22 40 23.66	9.411	8 24 3.3	56.35	12 59.44	0.445	22 27 24.22
Thur.	28	22 44 9.25	9.389	8 1 27.1	56.65	12 48.48	0.467	22 31 20.77
Fri.	29	22 47 54.33	9.368	S. 7 38 43.9	56.94	12 37.01	0.488	22 35 17.32

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	32	312 13 20.9	13 16.6	152.22	+0.58	9.9937183	28.4	3 14 34.21
2	33	313 14 13.8	14 9.4	152.18	0.55	.9937870	28.9	3 10 38.31
3	34	314 15 5.6	15 1.1	152.14	0.48	.9938570	29.4	3 6 42.40
4	35	315 15 56.3	15 51.6	152.09	0.39	.9939282	29.9	3 2 46.49
5	36	316 16 45.7	16 40.9	152.03	0.28	.9940006	30.4	2 58 50.57
6	37	317 17 33.7	17 28.8	151.97	0.16	.9940743	30.9	2 54 54.66
7	38	318 18 20.3	18 15.3	151.91	+0.03	.9941493	31.5	2 50 58.75
8	39	319 19 5.5	19 0.3	151.85	—0.11	.9942256	32.0	2 47 2.85
9	40	320 19 49.2	19 43.9	151.79	0.24	.9943033	32.6	2 43 6.94
10	41	321 20 31.3	20 25.9	151.72	0.35	.9943824	33.2	2 39 11.03
11	42	322 21 11.8	21 6.3	151.65	0.44	.9944630	33.9	2 35 15.12
12	43	323 21 50.6	21 45.0	151.58	0.50	.9945453	34.5	2 31 19.21
13	44	324 22 27.6	22 21.9	151.51	0.53	.9946293	35.2	2 27 23.31
14	45	325 23 2.9	22 57.1	151.43	0.53	.9947151	35.8	2 23 27.41
15	46	326 23 36.3	23 30.4	151.36	0.50	.9948027	36.5	2 19 31.50
16	47	327 24 8.0	24 2.0	151.29	0.45	.9948923	37.1	2 15 35.59
17	48	328 24 38.1	24 32.0	151.22	0.37	.9949840	38.8	2 11 39.68
18	49	329 25 6.5	25 0.3	151.15	0.27	.9950778	39.5	2 7 43.77
19	50	330 25 33.2	25 26.9	151.08	0.15	.9951737	40.3	2 3 47.87
20	51	331 25 58.3	25 51.9	151.01	—0.02	.9952716	41.1	1 59 51.96
21	52	332 26 21.9	26 15.4	150.95	+0.12	.9953715	41.9	1 55 56.05
22	53	333 26 44.0	26 37.4	150.89	0.26	.9954732	42.7	1 52 0.15
23	54	334 27 4.7	26 58.0	150.83	0.39	.9955767	43.4	1 48 4.24
24	55	335 27 23.9	27 17.1	150.77	0.50	.9956818	44.1	1 44 8.33
25	56	336 27 41.6	27 34.8	150.71	0.58	.9957884	44.7	1 40 12.43
26	57	337 27 57.9	27 51.0	150.65	0.63	.9958965	45.2	1 36 16.53
27	58	338 28 12.7	28 5.7	150.59	0.65	.9960057	45.7	1 32 20.62
28	59	339 28 26.0	28 18.9	150.52	0.65	.9961159	46.1	1 28 24.71
29	60	340 28 37.7	28 30.5	150.46	+0.62	9.9962270	46.4	1 24 28.80

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	Semidiameter. Noon.	Semidiameter. Midnight.	Horizontal Parallax. Noon.	Diff. for 1 hour.	Horizontal Parallax. Midnight.	Diff. for 1 hour.	Meridian Passage.	Diff. for 1 hour.	Age.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 51.0	14 53.4	54 23.4	+0.67	54 32.2	+0.80	22 21.4	2.01	26.5
2	14 56.2	14 59.4	54 42.5	0.91	54 54.0	1.00	23 9.8	2.01	27.5
3	15 2.8	15 6.4	55 6.5	1.08	55 19.8	1.14	23 58.1	2.00	28.5
4	15 10.2	15 14.1	55 33.7	1.18	55 48.1	1.21	δ		29.5
5	15 18.1	15 22.1	56 2.7	1.23	56 17.5	1.23	0 46.1	1.99	0.7
6	15 26.1	15 30.1	56 32.3	1.23	56 47.1	1.23	1 33.9	1.99	1.7
7	15 34.1	15 38.1	57 1.7	1.21	57 16.2	1.20	2 21.7	2.00	2.7
8	15 42.0	15 45.8	57 30.4	1.18	57 44.4	1.15	3 9.9	2.03	3.7
9	15 49.5	15 53.1	57 58.1	1.13	58 11.5	1.10	3 59.1	2.08	4.7
10	15 56.7	16 0.2	58 24.6	1.08	58 37.3	1.04	4 49.9	2.16	5.7
11	16 3.5	16 6.7	58 49.5	0.99	59 1.1	0.93	5 42.8	2.25	6.7
12	16 9.6	16 12.2	59 11.9	0.86	59 21.6	0.76	6 38.1	2.34	7.7
13	16 14.6	16 16.5	59 30.1	0.65	59 37.2	0.52	7 35.5	2.42	8.7
14	16 17.9	16 18.8	59 42.6	+0.36	59 45.9	+0.18	8 34.3	2.46	9.7
15	16 19.1	16 18.7	59 46.9	−0.02	59 45.4	−0.24	9 33.4	2.44	10.7
16	16 17.5	16 15.6	59 41.0	0.47	59 33.9	0.70	10 31.5	2.38	11.7
17	16 12.9	16 9.5	59 24.1	0.93	59 11.6	1.15	11 27.5	2.28	12.7
18	16 5.4	16 0.7	58 56.5	1.35	58 39.2	1.53	12 21.0	2.18	13.7
19	15 55.5	15 49.8	58 20.0	1.67	57 59.2	1.78	13 12.0	2.08	14.7
20	15 43.8	15 37.7	57 37.2	1.86	57 14.7	1.89	14 0.9	2.00	15.7
21	15 31.5	15 25.3	56 51.9	1.89	56 29.4	1.85	14 48.2	1.95	16.7
22	15 19.4	15 13.7	56 7.6	1.78	55 46.8	1.67	15 34.4	1.91	17.7
23	15 8.5	15 3.7	55 27.5	1.54	55 10.0	1.30	16 20.1	1.90	18.7
24	14 59.5	14 55.9	54 54.5	1.20	54 41.2	1.01	17 5.8	1.91	19.7
25	14 52.9	14 50.6	54 30.4	0.80	54 22.0	0.59	17 52.0	1.93	20.7
26	14 49.1	14 48.3	54 16.3	−0.37	54 13.2	−0.14	18 38.7	1.96	21.7
27	14 48.1	14 48.7	54 12.8	+0.07	54 15.0	+0.29	19 25.9	1.98	22.7
28	14 50.0	14 52.0	54 19.7	0.50	54 26.8	0.69	20 13.7	2.00	23.7
29	14 54.5	14 57.7	54 36.2	+0.87	54 47.7	+1.04	21 1.9	2.01	24.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 22 45.03	2.1030	S. 18 18 2.7	0.667
1	18 24 51.23	2.1037	18 17 20.1	0.753
2	18 26 57.48	2.1045	18 16 32.3	0.840
3	18 29 3.77	2.1052	18 15 39.3	0.926
4	18 31 10.10	2.1059	18 14 41.1	1.013
5	18 33 16.48	2.1066	18 13 37.7	1.100
6	18 35 22.90	2.1073	18 12 29.2	1.186
7	18 37 29.35	2.1079	18 11 15.4	1.273
8	18 39 35.85	2.1086	18 9 56.4	1.359
9	18 41 42.38	2.1092	18 8 32.3	1.446
10	18 43 48.95	2.1097	18 7 2.9	1.533
11	18 45 55.55	2.1102	18 5 28.4	1.619
12	18 48 2.18	2.1107	18 3 48.6	1.706
13	18 50 8.84	2.1113	18 2 3.6	1.793
14	18 52 15.54	2.1118	18 0 13.5	1.879
15	18 54 22.26	2.1123	17 58 18.1	1.966
16	18 56 29.01	2.1127	17 56 17.5	2.053
17	18 58 35.79	2.1132	17 54 11.8	2.139
18	19 0 42.60	2.1135	17 52 0.9	2.225
19	19 2 49.42	2.1138	17 49 44.8	2.312
20	19 4 56.26	2.1142	17 47 23.5	2.398
21	19 7 3.13	2.1146	17 44 57.0	2.485
22	19 9 10.01	2.1149	17 42 25.3	2.571
23	19 11 16.92	2.1152	S. 17 39 48.5	2.657

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 13 23.84	2.1155	S. 17 37 6.5	2.743
1	19 15 30.78	2.1157	17 34 19.4	2.828
2	19 17 37.73	2.1159	17 31 27.1	2.914
3	19 19 44.69	2.1161	17 28 29.7	3.000
4	19 21 51.66	2.1163	17 25 27.1	3.086
5	19 23 58.65	2.1165	17 22 19.4	3.171
6	19 26 5.64	2.1166	17 19 6.6	3.256
7	19 28 12.64	2.1167	17 15 48.7	3.341
8	19 30 19.65	2.1168	17 12 25.7	3.426
9	19 32 26.66	2.1169	17 8 57.6	3.511
10	19 34 33.68	2.1170	17 5 24.4	3.595
11	19 36 40.70	2.1170	17 1 46.1	3.680
12	19 38 47.72	2.1170	16 58 2.8	3.764
13	19 40 54.74	2.1170	16 54 14.4	3.848
14	19 43 1.76	2.1170	16 50 21.0	3.932
15	19 45 8.78	2.1169	16 46 22.6	4.016
16	19 47 15.79	2.1169	16 42 19.1	4.099
17	19 49 22.81	2.1168	16 38 10.7	4.182
18	19 51 29.81	2.1167	16 33 57.3	4.265
19	19 53 36.80	2.1166	16 29 38.9	4.348
20	19 55 43.80	2.1165	16 25 15.6	4.430
21	19 57 50.78	2.1163	16 20 47.4	4.512
22	19 59 57.75	2.1161	16 16 14.2	4.594
23	20 2 4.71	2.1159	16 11 36.1	4.676
24	20 4 11.66	2.1157	S. 16 6 53.1	4.757

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 4 11.66	2.1157	S. 16 6 53.1	4.757
1	20 6 18.60	2.1155	16 2 5.3	4.838
2	20 8 25.52	2.1152	15 57 12.6	4.919
3	20 10 32.43	2.1150	15 52 15.1	4.999
4	20 12 39.32	2.1147	15 47 12.7	5.079
5	20 14 46.20	2.1145	15 42 5.6	5.159
6	20 16 53.06	2.1142	15 36 53.7	5.238
7	20 18 59.90	2.1138	15 31 37.1	5.317
8	20 21 6.72	2.1135	15 26 15.7	5.396
9	20 23 13.52	2.1132	15 20 49.6	5.474
10	20 25 20.30	2.1128	15 15 18.8	5.552
11	20 27 27.06	2.1125	15 9 43.3	5.630
12	20 29 33.80	2.1122	15 4 3.2	5.707
13	20 31 40.52	2.1117	14 58 18.5	5.784
14	20 33 47.21	2.1113	14 52 29.2	5.860
15	20 35 53.88	2.1109	14 46 35.3	5.936
16	20 38 0.52	2.1105	14 40 36.8	6.012
17	20 40 7.14	2.1101	14 34 33.8	6.087
18	20 42 13.73	2.1097	14 28 26.3	6.162
19	20 44 20.30	2.1092	14 22 14.3	6.237
20	20 46 26.84	2.1088	14 15 57.9	6.311
21	20 48 33.36	2.1083	14 9 37.1	6.384
22	20 50 39.84	2.1078	14 3 11.8	6.457
23	20 52 46.30	2.1074	S. 13 56 42.2	6.530

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 54 52.73	2.1069	S. 13 50 8.2	6.603
1	20 56 59.13	2.1064	13 43 29.9	6.674
2	20 59 5.50	2.1060	13 36 47.4	6.745
3	21 1 11.85	2.1055	13 30 0.6	6.816
4	21 3 18.16	2.1050	13 23 9.6	6.886
5	21 5 24.45	2.1046	13 16 14.3	6.956
6	21 7 30.71	2.1040	13 9 14.9	7.026
7	21 9 36.93	2.1035	13 2 11.3	7.093
8	21 11 43.13	2.1031	12 55 3.7	7.161
9	21 13 49.30	2.1025	12 47 52.0	7.229
10	21 15 55.43	2.1020	12 40 36.2	7.296
11	21 18 1.54	2.1016	12 33 16.4	7.363
12	21 20 7.62	2.1011	12 25 52.5	7.429
13	21 22 13.67	2.1006	12 18 24.8	7.495
14	21 24 19.69	2.1001	12 10 53.2	7.560
15	21 26 25.68	2.0996	12 3 17.7	7.624
16	21 28 31.64	2.0991	11 55 38.3	7.687
17	21 30 37.57	2.0986	11 47 55.2	7.751
18	21 32 43.47	2.0982	11 40 8.3	7.813
19	21 34 49.35	2.0977	11 32 17.6	7.874
20	21 36 55.19	2.0972	11 24 23.2	7.937
21	21 39 1.01	2.0967	11 16 25.2	7.997
22	21 41 6.80	2.0962	11 8 23.5	8.058
23	21 43 12.56	2.0958	11 0 18.2	8.118
24	21 45 18.30	2.0954	S. 10 52 9.3	8.177

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 45 18.30	2.0954	S. 10 52 9.3	8.177
1	21 47 24.01	2.0950	10 43 56.9	8.235
2	21 49 29.70	2.0946	10 35 41.1	8.293
3	21 51 35.36	2.0941	10 27 21.8	8.350
4	21 53 40.99	2.0937	10 18 59.1	8.406
5	21 55 46.60	2.0933	10 10 33.0	8.462
6	21 57 52.19	2.0930	10 2 3.6	8.517
7	21 59 57.76	2.0927	9 53 30.9	8.572
8	22 2 3.31	2.0923	9 44 55.0	8.626
9	22 4 8.84	2.0919	9 36 15.9	8.679
10	22 6 14.34	2.0915	9 27 33.6	8.731
11	22 8 19.82	2.0912	9 18 48.2	8.783
12	22 10 25.29	2.0910	9 9 59.6	8.834
13	22 12 30.74	2.0907	9 1 8.0	8.885
14	22 14 36.17	2.0904	8 52 13.4	8.934
15	22 16 41.59	2.0902	8 43 15.9	8.983
16	22 18 47.00	2.0900	8 34 15.4	9.032
17	22 20 52.39	2.0897	8 25 12.1	9.080
18	22 22 57.77	2.0895	8 16 5.9	9.126
19	22 25 3.14	2.0893	8 6 56.9	9.173
20	22 27 8.49	2.0892	7 57 45.2	9.218
21	22 29 13.84	2.0891	7 48 30.7	9.263
22	22 31 19.18	2.0889	7 39 13.6	9.307
23	22 33 24.51	2.0888	S. 7 29 53.8	9.350

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 35 29.84	2.0887	S. 7 20 31.5	9.393
1	22 37 35.16	2.0887	7 11 6.6	9.435
2	22 39 40.48	2.0887	7 1 39.3	9.476
3	22 41 45.80	2.0887	6 52 9.5	9.516
4	22 43 51.12	2.0887	6 42 37.3	9.556
5	22 45 56.44	2.0888	6 33 2.8	9.595
6	22 48 1.77	2.0888	6 23 26.0	9.633
7	22 50 7.10	2.0888	6 13 46.9	9.670
8	22 52 12.43	2.0889	6 4 5.6	9.707
9	22 54 17.78	2.0891	5 54 22.1	9.742
10	22 56 23.13	2.0892	5 44 36.5	9.777
11	22 58 28.49	2.0893	5 34 48.8	9.812
12	23 0 33.86	2.0896	5 24 59.1	9.845
13	23 2 39.25	2.0899	5 15 7.4	9.877
14	23 4 44.65	2.0902	5 5 13.8	9.909
15	23 6 50.07	2.0905	4 55 18.3	9.940
16	23 8 55.51	2.0908	4 45 21.0	9.971
17	23 11 0.97	2.0912	4 35 21.9	10.000
18	23 13 6.45	2.0916	4 25 21.0	10.028
19	23 15 11.96	2.0920	4 15 18.4	10.056
20	23 17 17.49	2.0924	4 5 14.2	10.083
21	23 19 23.05	2.0929	3 55 8.4	10.110
22	23 21 28.64	2.0934	3 45 1.1	10.135
23	23 23 34.26	2.0939	3 34 52.3	10.159
24	23 25 39.91	2.0945	S. 3 24 42.0	10.183

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 25 39.91	2.0945	S. 3 24 42.0	10.183
1	23 27 45.60	2.0952	3 14 30.3	10.206
2	23 29 51.33	2.0958	3 4 17.3	10.228
3	23 31 57.09	2.0964	2 54 3.0	10.249
4	23 34 2.90	2.0971	2 43 47.4	10.269
5	23 36 8.75	2.0978	2 33 30.7	10.269
6	23 38 14.64	2.0986	2 23 12.8	10.307
7	23 40 20.58	2.0994	2 12 53.8	10.325
8	23 42 26.57	2.1003	2 2 33.8	10.342
9	23 44 32.61	2.1012	1 52 12.8	10.358
10	23 46 38.71	2.1021	1 41 50.9	10.373
11	23 48 44.86	2.1030	1 31 28.1	10.387
12	23 50 51.07	2.1040	1 21 4.4	10.401
13	23 52 57.34	2.1050	1 10 40.0	10.413
14	23 55 3.67	2.1060	1 0 14.8	10.425
15	23 57 10.06	2.1071	0 49 49.0	10.436
16	23 59 16.52	2.1082	0 39 22.5	10.445
17	0 1 23.05	2.1094	0 28 55.5	10.454
18	0 3 29.65	2.1106	0 18 28.0	10.463
19	0 5 36.32	2.1118	S. 0 8 0.0	10.470
20	0 7 43.07	2.1132	N. 0 2 28.4	10.476
21	0 9 49.90	2.1144	0 12 57.1	10.482
22	0 11 56.80	2.1157	0 23 26.2	10.486
23	0 14 3.79	2.1172	N. 0 33 55.5	10.490

FRIDAY, 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 16 10.86	2.1186	N. 0 44 25.0	10.493
1	0 18 18.02	2.1200	0 54 54.6	10.494
2	0 20 25.26	2.1215	1 5 24.3	10.496
3	0 22 32.60	2.1231	1 15 54.1	10.496
4	0 24 40.03	2.1247	1 26 23.8	10.494
5	0 26 47.56	2.1263	1 36 53.4	10.493
6	0 28 55.18	2.1279	1 47 22.9	10.490
7	0 31 2.91	2.1296	1 57 52.2	10.486
8	0 33 10.74	2.1313	2 8 21.3	10.482
9	0 35 18.67	2.1331	2 18 50.1	10.476
10	0 37 26.71	2.1349	2 29 18.5	10.470
11	0 39 34.86	2.1367	2 39 46.5	10.462
12	0 41 43.12	2.1386	2 50 14.0	10.454
13	0 43 51.49	2.1406	3 0 41.0	10.445
14	0 45 59.99	2.1426	3 11 7.4	10.434
15	0 48 8.60	2.1446	3 21 33.2	10.423
16	0 50 17.33	2.1466	3 31 58.2	10.411
17	0 52 26.19	2.1487	3 42 22.5	10.398
18	0 54 35.17	2.1508	3 52 46.0	10.384
19	0 56 44.28	2.1529	4 3 8.6	10.369
20	0 58 53.52	2.1551	4 13 30.3	10.351
21	1 1 2.90	2.1574	4 23 51.0	10.336
22	1 3 12.41	2.1596	4 34 10.6	10.318
23	1 5 22.05	2.1619	4 44 29.1	10.299
24	1 7 31.84	2.1643	N. 4 54 46.4	10.279

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 7 31.84	2.1643	N. 4 54 46.4	10.279	0	2 54 46.15	2.3147	N.12 26 13.5	8.138
1	1 9 41.77	2.1667	5 5 2.5	10.258	1	2 57 5.14	2.3184	12 34 19.7	8.068
2	1 11 51.84	2.1691	5 15 17.4	10.236	2	2 59 24.36	2.3221	12 42 21.6	7.997
3	1 14 2.06	2.1716	5 25 30.9	10.214	3	3 1 43.80	2.3258	12 50 19.3	7.926
4	1 16 12.43	2.1741	5 35 43.0	10.190	4	3 4 3.46	2.3295	12 58 12.6	7.852
5	1 18 22.95	2.1766	5 45 53.7	10.166	5	3 6 23.34	2.3332	13 6 1.5	7.778
6	1 20 33.62	2.1791	5 56 2.8	10.139	6	3 8 43.44	2.3369	13 13 46.0	7.703
7	1 22 44.44	2.1817	6 6 10.4	10.112	7	3 11 3.76	2.3406	13 21 25.9	7.627
8	1 24 55.42	2.1844	6 16 16.3	10.084	8	3 13 24.31	2.3443	13 29 1.2	7.550
9	1 27 6.57	2.1872	6 26 20.5	10.056	9	3 15 45.08	2.3481	13 36 31.9	7.472
10	1 29 17.88	2.1899	6 36 23.0	10.026	10	3 18 6.08	2.3518	13 43 57.9	7.393
11	1 31 29.35	2.1926	6 46 23.6	9.995	11	3 20 27.30	2.3555	13 51 19.1	7.313
12	1 33 40.99	2.1953	6 56 22.4	9.963	12	3 22 48.74	2.3592	13 58 35.5	7.232
13	1 35 52.79	2.1982	7 6 19.2	9.931	13	3 25 10.40	2.3629	14 5 47.0	7.150
14	1 38 4.77	2.2011	7 16 14.1	9.897	14	3 27 32.29	2.3666	14 12 53.5	7.067
15	1 40 16.92	2.2040	7 26 6.9	9.862	15	3 29 54.40	2.3703	14 19 55.0	6.983
16	1 42 29.25	2.2069	7 35 57.6	9.826	16	3 32 16.73	2.3740	14 26 51.4	6.898
17	1 44 41.75	2.2098	7 45 46.1	9.790	17	3 34 39.28	2.3777	14 33 42.7	6.812
18	1 46 54.42	2.2128	7 55 32.4	9.752	18	3 37 2.05	2.3813	14 40 28.8	6.725
19	1 49 7.28	2.2158	8 5 16.4	9.713	19	3 39 25.04	2.3850	14 47 9.7	6.637
20	1 51 20.32	2.2189	8 14 58.0	9.673	20	3 41 48.25	2.3887	14 53 45.3	6.548
21	1 53 33.55	2.2220	8 24 37.2	9.632	21	3 44 11.68	2.3923	15 0 15.5	6.458
22	1 55 46.96	2.2251	8 34 13.9	9.590	22	3 46 35.33	2.3959	15 6 40.3	6.367
23	1 58 0.56	2.2282	N. 8 43 48.0	9.547	23	3 48 59.19	2.3995	N.15 12 59.6	6.276
	SUNDAY 10.					TUESDAY 12.			
0	2 0 14.35	2.2314	N. 8 53 19.5	9.504	0	3 51 23.27	2.4031	N.15 19 13.4	6.183
1	2 2 28.33	2.2346	9 2 48.4	9.459	1	3 53 47.56	2.4067	15 25 21.6	6.089
2	2 4 42.50	2.2378	9 12 14.5	9.413	2	3 56 12.07	2.4102	15 31 24.1	5.996
3	2 6 56.87	2.2411	9 21 37.9	9.366	3	3 58 36.79	2.4137	15 37 20.9	5.899
4	2 9 11.44	2.2444	9 30 58.4	9.317	4	4 1 1.72	2.4172	15 43 12.0	5.803
5	2 11 26.20	2.2477	9 40 16.0	9.268	5	4 3 26.85	2.4207	15 48 57.3	5.705
6	2 13 41.16	2.2511	9 49 30.6	9.218	6	4 5 52.20	2.4242	15 54 36.7	5.607
7	2 15 56.33	2.2544	9 58 42.2	9.167	7	4 8 17.75	2.4276	16 0 10.2	5.508
8	2 18 11.69	2.2578	10 7 50.6	9.115	8	4 10 43.50	2.4308	16 5 37.7	5.408
9	2 20 27.26	2.2612	10 16 55.9	9.062	9	4 13 9.45	2.4342	16 10 59.2	5.307
10	2 22 43.04	2.2647	10 25 58.0	9.007	10	4 15 35.61	2.4376	16 16 14.6	5.206
11	2 24 59.02	2.2681	10 34 56.8	8.952	11	4 18 1.96	2.4408	16 21 23.9	5.103
12	2 27 15.21	2.2716	10 43 52.3	8.896	12	4 20 28.51	2.4441	16 26 27.0	5.000
13	2 29 31.61	2.2751	10 52 44.3	8.838	13	4 22 55.25	2.4473	16 31 23.9	4.896
14	2 31 48.22	2.2786	11 1 32.9	8.780	14	4 25 22.18	2.4505	16 36 14.5	4.791
15	2 34 5.04	2.2822	11 10 17.9	8.720	15	4 27 49.31	2.4537	16 40 58.8	4.685
16	2 36 22.08	2.2858	11 18 59.3	8.660	16	4 30 16.62	2.4567	16 45 36.7	4.578
17	2 38 39.33	2.2893	11 27 37.1	8.598	17	4 32 44.11	2.4597	16 50 8.2	4.471
18	2 40 56.79	2.2928	11 36 11.1	8.535	18	4 35 11.78	2.4627	16 54 33.2	4.363
19	2 43 14.47	2.2965	11 44 41.3	8.472	19	4 37 39.63	2.4657	16 58 51.7	4.254
20	2 45 32.37	2.3002	11 53 7.7	8.407	20	4 40 7.66	2.4687	17 3 3.7	4.145
21	2 47 50.49	2.3038	12 1 30.2	8.341	21	4 42 35.87	2.4716	17 7 9.1	4.034
22	2 50 8.82	2.3074	12 9 48.7	8.275	22	4 45 4.25	2.4743	17 11 7.9	3.923
23	2 52 27.38	2.3111	12 18 3.1	8.207	23	4 47 32.78	2.4770	17 15 0.0	3.812
24	2 54 46.15	2.3147	N.12 26 13.5	8.138	24	4 50 1.49	2.4798	N.17 18 45.3	3.699

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 50 1.49	2.4798	N.17 18 45.3	3.699
1	4 52 30.36	2.4824	17 22 23.9	3.586
2	4 54 59.38	2.4850	17 25 55.7	3.472
3	4 57 28.56	2.4876	17 29 20.6	3.358
4	4 59 57.90	2.4901	17 32 38.6	3.243
5	5 2 27.38	2.4925	17 35 49.7	3.128
6	5 4 57.00	2.4948	17 38 53.9	3.011
7	5 7 26.76	2.4972	17 41 51.1	2.895
8	5 9 56.66	2.4995	17 44 41.3	2.778
9	5 12 26.70	2.5017	17 47 24.4	2.660
10	5 14 56.87	2.5038	17 50 0.5	2.541
11	5 17 27.16	2.5058	17 52 29.4	2.423
12	5 19 57.57	2.5078	17 54 51.2	2.303
13	5 22 28.10	2.5097	17 57 5.8	2.183
14	5 24 58.74	2.5116	17 59 13.2	2.063
15	5 27 29.49	2.5134	18 1 13.4	1.942
16	5 30 0.35	2.5152	18 3 6.3	1.821
17	5 32 31.31	2.5168	18 4 51.9	1.700
18	5 35 2.36	2.5183	18 6 30.3	1.578
19	5 37 33.51	2.5199	18 8 1.3	1.456
20	5 40 4.75	2.5213	18 9 24.9	1.334
21	5 42 36.07	2.5226	18 10 41.2	1.211
22	5 45 7.47	2.5239	18 11 50.2	1.088
23	5 47 38.94	2.5251	N.18 12 51.8	0.964

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 50 10.48	2.5262	N.18 13 46.0	0.841
1	5 52 42.09	2.5273	18 14 32.7	0.717
2	5 55 13.76	2.5282	18 15 12.0	0.593
3	5 57 45.48	2.5291	18 15 43.8	0.468
4	6 0 17.25	2.5299	18 16 8.2	0.344
5	6 2 49.07	2.5307	18 16 25.1	0.220
6	6 5 20.93	2.5313	18 16 34.5	0.095
7	6 7 52.83	2.5319	18 16 36.5	0.030
8	6 10 24.76	2.5324	18 16 31.0	0.155
9	6 12 56.72	2.5328	18 16 18.0	0.279
10	6 15 28.70	2.5331	18 15 57.5	0.404
11	6 18 0.69	2.5333	18 15 29.5	0.529
12	6 20 32.70	2.5335	18 14 53.9	0.654
13	6 23 4.71	2.5336	18 14 10.9	0.780
14	6 25 36.73	2.5336	18 13 20.4	0.906
15	6 28 8.75	2.5335	18 12 22.4	1.029
16	6 30 40.75	2.5333	18 11 16.9	1.154
17	6 33 12.74	2.5331	18 10 3.9	1.278
18	6 35 44.72	2.5328	18 8 43.5	1.403
19	6 38 16.68	2.5324	18 7 15.6	1.527
20	6 40 48.61	2.5318	18 5 40.3	1.651
21	6 43 20.50	2.5312	18 3 57.5	1.774
22	6 45 52.36	2.5306	18 2 7.3	1.898
23	6 48 24.17	2.5298	18 0 9.7	2.022
24	6 50 55.94	2.5291	N.17 58 4.7	2.145

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 50 55.94	2.5291	N.17 58 4.7	2.145
1	6 53 27.66	2.5282	17 55 52.3	2.267
2	6 55 59.32	2.5271	17 53 32.6	2.390
3	6 58 30.91	2.5260	17 51 5.6	2.512
4	7 1 2.44	2.5249	17 48 31.2	2.633
5	7 3 33.90	2.5237	17 45 49.6	2.754
6	7 6 5.29	2.5224	17 43 0.7	2.875
7	7 8 36.59	2.5210	17 40 4.6	2.995
8	7 11 7.81	2.5196	17 37 1.3	3.115
9	7 13 38.94	2.5180	17 33 50.8	3.235
10	7 16 9.97	2.5164	17 30 33.2	3.353
11	7 18 40.91	2.5147	17 27 8.4	3.472
12	7 21 11.74	2.5129	17 23 36.5	3.590
13	7 23 42.46	2.5111	17 19 57.6	3.707
14	7 26 13.08	2.5092	17 16 11.7	3.824
15	7 28 43.57	2.5072	17 12 18.8	3.940
16	7 31 13.94	2.5052	17 8 19.0	4.055
17	7 33 44.19	2.5031	17 4 12.3	4.169
18	7 36 14.31	2.5008	16 59 58.7	4.282
19	7 38 44.29	2.4986	16 55 38.3	4.396
20	7 41 14.14	2.4963	16 51 11.1	4.509
21	7 43 43.85	2.4939	16 46 37.2	4.621
22	7 46 13.41	2.4914	16 41 56.6	4.732
23	7 48 42.82	2.4889	N.16 37 9.3	4.843

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 51 12.08	2.4863	N.16 32 15.4	4.952
1	7 53 41.18	2.4837	16 27 15.0	5.061
2	7 56 10.12	2.4810	16 22 8.1	5.169
3	7 58 38.90	2.4782	16 16 54.7	5.277
4	8 1 7.51	2.4754	16 11 34.9	5.383
5	8 3 35.95	2.4725	16 6 8.7	5.489
6	8 6 4.21	2.4696	16 0 36.2	5.593
7	8 8 32.30	2.4667	15 54 57.5	5.697
8	8 11 0.21	2.4636	15 49 12.6	5.800
9	8 13 27.93	2.4604	15 43 21.5	5.902
10	8 15 55.46	2.4573	15 37 24.4	6.003
11	8 18 22.81	2.4542	15 31 21.2	6.103
12	8 20 49.96	2.4509	15 25 12.0	6.202
13	8 23 16.92	2.4476	15 18 56.9	6.300
14	8 25 43.67	2.4442	15 12 36.0	6.397
15	8 28 10.23	2.4409	15 6 9.3	6.493
16	8 30 36.58	2.4375	14 59 36.9	6.588
17	8 33 2.73	2.4341	14 52 58.8	6.682
18	8 35 28.67	2.4306	14 46 15.1	6.775
19	8 37 54.40	2.4270	14 39 25.8	6.866
20	8 40 19.91	2.4234	14 32 31.1	6.957
21	8 42 45.21	2.4199	14 25 31.0	7.047
22	8 45 10.30	2.4163	14 18 25.5	7.136
23	8 47 35.16	2.4125	14 11 14.7	7.223
24	8 49 59.80	2.4088	N.14 3 58.7	7.309

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 49 59.80	2.4088	N.14 3 58.7	7.309
1	8 52 24.22	2.4051	13 56 37.6	7.395
2	8 54 48.41	2.4013	13 49 11.4	7.479
3	8 57 12.38	2.3976	13 41 40.2	7.562
4	8 59 36.12	2.3937	13 34 4.0	7.644
5	9 1 59.62	2.3898	13 26 22.9	7.724
6	9 4 22.89	2.3860	13 18 37.0	7.804
7	9 6 45.94	2.3822	13 10 46.4	7.882
8	9 9 8.76	2.3783	13 2 51.2	7.959
9	9 11 31.34	2.3743	12 54 51.3	8.035
10	9 13 53.68	2.3703	12 46 46.9	8.110
11	9 16 15.78	2.3664	12 38 38.0	8.184
12	9 18 37.65	2.3625	12 30 24.8	8.256
13	9 20 59.28	2.3585	12 22 7.3	8.328
14	9 23 20.67	2.3544	12 13 45.5	8.398
15	9 25 41.81	2.3504	12 5 19.5	8.467
16	9 28 2.72	2.3465	11 56 49.4	8.535
17	9 30 23.39	2.3424	11 48 15.3	8.601
18	9 32 43.81	2.3383	11 39 37.3	8.666
19	9 35 3.99	2.3343	11 30 55.4	8.730
20	9 37 23.93	2.3302	11 22 9.7	8.793
21	9 39 43.62	2.3262	11 13 20.2	8.855
22	9 42 3.08	2.3222	11 4 27.0	8.916
23	9 44 22.29	2.3182	N.10 55 30.3	8.975

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 46 41.26	2.3141	N.10 46 30.0	9.033
1	9 48 59.98	2.3100	10 37 26.3	9.090
2	9 51 18.46	2.3060	10 28 19.2	9.145
3	9 53 36.70	2.3020	10 19 8.8	9.200
4	9 55 54.70	2.2979	10 9 55.2	9.253
5	9 58 12.45	2.2938	10 0 38.5	9.305
6	10 0 29.96	2.2898	9 51 18.7	9.355
7	10 2 47.23	2.2858	9 41 55.9	9.405
8	10 5 4.26	2.2817	9 32 30.1	9.453
9	10 7 21.04	2.2777	9 23 1.5	9.500
10	10 9 37.59	2.2738	9 13 30.1	9.546
11	10 11 53.90	2.2698	9 3 56.0	9.591
12	10 14 9.97	2.2658	8 54 19.2	9.634
13	10 16 25.80	2.2619	8 44 39.9	9.676
14	10 18 41.40	2.2580	8 34 58.1	9.717
15	10 20 56.76	2.2540	8 25 13.9	9.757
16	10 23 11.88	2.2500	8 15 27.3	9.795
17	10 25 26.76	2.2462	8 5 38.4	9.833
18	10 27 41.42	2.2423	7 55 47.3	9.869
19	10 29 55.84	2.2384	7 45 54.1	9.904
20	10 32 10.03	2.2346	7 35 58.9	9.938
21	10 34 23.99	2.2308	7 26 1.6	9.970
22	10 36 37.73	2.2270	7 16 2.4	10.002
23	10 38 51.23	2.2232	7 6 1.3	10.032
24	10 41 4.51	2.2194	N. 6 55 58.5	10.061

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 41 4.51	2.2194	N. 6 55 58.5	10.061
1	10 43 17.56	2.2157	6 45 54.0	10.089
2	10 45 30.39	2.2120	6 35 47.8	10.116
3	10 47 43.00	2.2083	6 25 40.0	10.142
4	10 49 55.39	2.2046	6 15 30.7	10.166
5	10 52 7.55	2.2009	6 5 20.0	10.190
6	10 54 19.50	2.1974	5 55 7.9	10.212
7	10 56 31.24	2.1938	5 44 54.5	10.233
8	10 58 42.76	2.1902	5 34 39.9	10.253
9	11 0 54.06	2.1867	5 24 24.1	10.272
10	11 3 5.16	2.1832	5 14 7.2	10.290
11	11 5 16.04	2.1797	5 3 49.3	10.307
12	11 7 26.72	2.1762	4 53 30.4	10.323
13	11 9 37.19	2.1728	4 43 10.6	10.337
14	11 11 47.46	2.1694	4 32 49.9	10.351
15	11 13 57.52	2.1661	4 22 28.5	10.363
16	11 16 7.39	2.1627	4 12 6.3	10.375
17	11 18 17.05	2.1594	4 1 43.5	10.385
18	11 20 26.52	2.1562	3 51 20.1	10.394
19	11 22 35.79	2.1529	3 40 56.2	10.403
20	11 24 44.87	2.1497	3 30 31.8	10.410
21	11 26 53.76	2.1466	3 20 7.0	10.416
22	11 29 2.46	2.1434	3 9 41.9	10.421
23	11 31 10.97	2.1403	N. 2 59 16.5	10.425

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 33 19.30	2.1373	N. 2 48 50.8	10.429
1	11 35 27.44	2.1342	2 38 25.0	10.431
2	11 37 35.41	2.1312	2 27 59.1	10.432
3	11 39 43.19	2.1283	2 17 33.1	10.432
4	11 41 50.80	2.1254	2 7 7.2	10.431
5	11 43 58.24	2.1225	1 56 41.3	10.430
6	11 46 5.50	2.1196	1 46 15.6	10.428
7	11 48 12.59	2.1167	1 35 50.0	10.424
8	11 50 19.51	2.1140	1 25 24.7	10.419
9	11 52 26.27	2.1113	1 14 59.7	10.414
10	11 54 32.86	2.1086	1 4 35.0	10.408
11	11 56 39.30	2.1059	0 54 10.8	10.400
12	11 58 45.57	2.1033	0 43 47.0	10.392
13	12 0 51.69	2.1007	0 33 23.7	10.383
14	12 2 57.65	2.0980	0 23 1.0	10.373
15	12 5 3.45	2.0955	0 12 38.9	10.362
16	12 7 9.11	2.0931	N. 0 2 17.5	10.350
17	12 9 14.62	2.0906	S. 0 8 3.1	10.337
18	12 11 19.98	2.0882	0 18 23.0	10.324
19	12 13 25.20	2.0858	0 28 42.0	10.310
20	12 15 30.28	2.0835	0 39 0.1	10.295
21	12 17 35.22	2.0812	0 49 17.3	10.279
22	12 19 40.02	2.0789	0 59 33.5	10.263
23	12 21 44.69	2.0767	1 9 48.7	10.244
24	12 23 49.23	2.0746	S. 1 20 2.8	10.226

GREENWICH MEAN TIME.

◆

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 23 49.23	2.0746	S. 1 20 2.8	10.226
1	12 25 53.64	2.0724	1 30 15.8	10.207
2	12 27 57.92	2.0702	1 40 27.6	10.187
3	12 30 2.07	2.0682	1 50 38.2	10.166
4	12 32 6.10	2.0662	2 0 47.5	10.144
5	12 34 10.01	2.0642	2 10 55.5	10.122
6	12 36 13.80	2.0622	2 21 2.1	10.099
7	12 38 17.47	2.0603	2 31 7.3	10.075
8	12 40 21.03	2.0584	2 41 11.1	10.050
9	12 42 24.48	2.0566	2 51 13.4	10.025
10	12 44 27.82	2.0548	3 1 14.1	9.999
11	12 46 31.05	2.0530	3 11 13.3	9.972
12	12 48 34.18	2.0513	3 21 10.8	9.945
13	12 50 37.20	2.0496	3 31 6.6	9.916
14	12 52 40.13	2.0479	3 41 0.7	9.887
15	12 54 42.95	2.0463	3 50 53.1	9.856
16	12 56 45.68	2.0447	4 0 43.7	9.827
17	12 58 48.32	2.0432	4 10 32.4	9.796
18	13 0 50.86	2.0417	4 20 19.2	9.765
19	13 2 53.32	2.0402	4 30 4.1	9.732
20	13 4 55.69	2.0387	4 39 47.0	9.699
21	13 6 57.97	2.0373	4 49 28.0	9.665
22	13 9 0.17	2.0360	4 59 6.9	9.631
23	13 11 2.29	2.0347	S. 5 8 43.7	9.596

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 13 4.33	2.0334	S. 5 18 18.4	9.560
1	13 15 6.30	2.0322	5 27 51.0	9.524
2	13 17 8.19	2.0309	5 37 21.3	9.487
3	13 19 10.01	2.0297	5 46 49.4	9.450
4	13 21 11.76	2.0286	5 56 15.3	9.411
5	13 23 13.44	2.0275	6 5 38.8	9.373
6	13 25 15.06	2.0265	6 15 0.0	9.333
7	13 27 16.62	2.0254	6 24 18.8	9.294
8	13 29 18.11	2.0243	6 33 35.2	9.253
9	13 31 19.54	2.0234	6 42 49.2	9.212
10	13 33 20.92	2.0226	6 52 0.7	9.170
11	13 35 22.25	2.0217	7 1 9.6	9.128
12	13 37 23.52	2.0208	7 10 16.0	9.085
13	13 39 24.74	2.0199	7 19 19.8	9.042
14	13 41 25.91	2.0192	7 28 21.0	8.998
15	13 43 27.04	2.0184	7 37 19.6	8.954
16	13 45 28.12	2.0176	7 46 15.5	8.909
17	13 47 29.15	2.0169	7 55 8.7	8.863
18	13 49 30.15	2.0163	8 3 59.1	8.817
19	13 51 31.11	2.0157	8 12 46.8	8.771
20	13 53 32.03	2.0151	8 21 31.6	8.724
21	13 55 32.92	2.0146	8 30 13.6	8.676
22	13 57 33.77	2.0139	8 38 52.7	8.628
23	13 59 34.59	2.0135	8 47 29.0	8.580
24	14 1 35.39	2.0131	S. 8 56 2.3	8.530

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 1 35.39	2.0131	S. 8 56 2.3	8.530
1	14 3 36.16	2.0126	9 4 32.6	8.481
2	14 5 36.90	2.0122	9 13 0.0	8.431
3	14 7 37.62	2.0117	9 21 24.3	8.380
4	14 9 38.31	2.0114	9 29 45.6	8.329
5	14 11 38.99	2.0112	9 38 3.8	8.278
6	14 13 39.65	2.0108	9 46 18.9	8.226
7	14 15 40.29	2.0106	9 54 30.9	8.173
8	14 17 40.92	2.0104	10 2 39.7	8.120
9	14 19 41.54	2.0102	10 10 45.3	8.067
10	14 21 42.15	2.0100	10 18 47.7	8.013
11	14 23 42.74	2.0098	10 26 46.9	7.959
12	14 25 43.33	2.0097	10 34 42.8	7.904
13	14 27 43.91	2.0097	10 42 35.4	7.849
14	14 29 44.49	2.0097	10 50 24.7	7.793
15	14 31 45.07	2.0097	10 58 10.6	7.737
16	14 33 45.65	2.0097	11 5 53.1	7.681
17	14 35 46.23	2.0097	11 13 32.3	7.624
18	14 37 46.81	2.0098	11 21 8.0	7.567
19	14 39 47.40	2.0098	11 28 40.3	7.509
20	14 41 47.99	2.0099	11 36 9.1	7.451
21	14 43 48.59	2.0100	11 43 34.4	7.392
22	14 45 49.19	2.0101	11 50 56.2	7.333
23	14 47 49.80	2.0103	S. 11 58 14.4	7.274

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 49 50.43	2.0106	S. 12 5 29.1	7.214
1	14 51 51.07	2.0108	12 12 40.1	7.154
2	14 53 51.72	2.0110	12 19 47.5	7.093
3	14 55 52.39	2.0113	12 26 51.3	7.032
4	14 57 53.08	2.0116	12 33 51.4	6.971
5	14 59 53.78	2.0119	12 40 47.8	6.909
6	15 1 54.51	2.0123	12 47 40.5	6.847
7	15 3 55.27	2.0127	12 54 29.5	6.785
8	15 5 56.04	2.0130	13 1 14.7	6.722
9	15 7 56.83	2.0134	13 7 56.2	6.659
10	15 9 57.65	2.0138	13 14 33.9	6.595
11	15 11 58.49	2.0142	13 21 7.7	6.532
12	15 13 59.36	2.0147	13 27 37.7	6.467
13	15 16 0.26	2.0152	13 34 3.8	6.402
14	15 18 1.19	2.0157	13 40 26.0	6.337
15	15 20 2.15	2.0162	13 46 44.3	6.272
16	15 22 3.14	2.0167	13 52 58.7	6.206
17	15 24 4.16	2.0173	13 59 9.1	6.140
18	15 26 5.22	2.0180	14 5 15.5	6.074
19	15 28 6.32	2.0186	14 11 17.9	6.007
20	15 30 7.45	2.0192	14 17 16.3	5.940
21	15 32 8.61	2.0198	14 23 10.7	5.873
22	15 34 9.82	2.0205	14 29 1.0	5.805
23	15 36 11.07	2.0212	14 34 47.3	5.737
24	15 38 12.36	2.0218	S. 14 40 29.5	5.669

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 38 12.36	2.0218	S.14 40 29.5	5.669
1	15 40 13.69	2.0225	14 46 7.5	5.600
2	15 42 15.06	2.0232	14 51 41.4	5.531
3	15 44 16.48	2.0240	14 57 11.2	5.461
4	15 46 17.94	2.0247	15 2 36.8	5.392
5	15 48 19.44	2.0254	15 7 58.2	5.322
6	15 50 20.99	2.0262	15 13 15.4	5.251
7	15 52 22.59	2.0270	15 18 28.4	5.181
8	15 54 24.23	2.0278	15 23 37.1	5.110
9	15 56 25.92	2.0286	15 28 41.5	5.039
10	15 58 27.66	2.0294	15 33 41.7	4.967
11	16 0 29.45	2.0302	15 38 37.6	4.895
12	16 2 31.29	2.0311	15 43 29.2	4.823
13	16 4 33.18	2.0319	15 48 16.4	4.751
14	16 6 35.12	2.0327	15 52 59.3	4.678
15	16 8 37.11	2.0336	15 57 37.8	4.605
16	16 10 39.15	2.0345	16 2 11.9	4.532
17	16 12 41.25	2.0354	16 6 41.6	4.458
18	16 14 43.40	2.0363	16 11 6.9	4.384
19	16 16 45.61	2.0372	16 15 27.8	4.311
20	16 18 47.87	2.0381	16 19 44.2	4.236
21	16 20 50.18	2.0389	16 23 56.1	4.162
22	16 22 52.54	2.0398	16 28 3.6	4.087
23	16 24 54.96	2.0408	S.16 32 6.5	4.011

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 26 57.44	2.0418	S.16 36 4.9	3.936
1	16 28 59.97	2.0427	16 39 58.8	3.860
2	16 31 2.56	2.0436	16 43 48.1	3.784
3	16 33 5.20	2.0445	16 47 32.9	3.708
4	16 35 7.90	2.0455	16 51 13.1	3.631
5	16 37 10.66	2.0465	16 54 48.7	3.555
6	16 39 13.48	2.0474	16 58 19.7	3.478
7	16 41 16.35	2.0483	17 1 46.1	3.401
8	16 43 19.28	2.0492	17 5 7.8	3.323
9	16 45 22.26	2.0502	17 8 24.8	3.245
10	16 47 25.31	2.0512	17 11 37.2	3.167
11	16 49 28.41	2.0522	17 14 44.9	3.089
12	16 51 31.57	2.0532	17 17 47.9	3.011
13	16 53 34.79	2.0541	17 20 46.2	2.932
14	16 55 38.06	2.0551	17 23 39.8	2.853
15	16 57 41.40	2.0561	17 26 28.6	2.774
16	16 59 44.79	2.0570	17 29 12.7	2.695
17	17 1 48.24	2.0580	17 31 52.0	2.615
18	17 3 51.75	2.0589	17 34 26.5	2.535
19	17 5 55.31	2.0599	17 36 56.2	2.455
20	17 7 58.94	2.0609	17 39 21.2	2.375
21	17 10 2.66	2.0618	17 41 41.3	2.295
22	17 12 6.32	2.0628	17 43 56.6	2.215
23	17 14 10.16	2.0637	17 46 7.1	2.134
24	17 16 14.01	2.0647	S.17 48 12.7	2.053

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 16 14.01	2.0647	S.17 48 12.7	2.053
1	17 18 17.92	2.0657	17 50 13.4	1.972
2	17 20 21.89	2.0667	17 52 9.3	1.891
3	17 22 25.92	2.0676	17 54 0.3	1.809
4	17 24 30.00	2.0685	17 55 46.4	1.727
5	17 26 34.14	2.0694	17 57 27.6	1.645
6	17 28 38.33	2.0703	17 59 3.9	1.563
7	17 30 42.58	2.0713	18 0 35.2	1.481
8	17 32 46.89	2.0722	18 2 1.6	1.399
9	17 34 51.25	2.0731	18 3 23.1	1.317
10	17 36 55.66	2.0740	18 4 39.6	1.234
11	17 39 0.13	2.0750	18 5 51.1	1.151
12	17 41 4.66	2.0759	18 6 57.7	1.068
13	17 43 9.24	2.0768	18 7 59.3	0.985
14	17 45 13.87	2.0776	18 8 55.9	0.901
15	17 47 18.55	2.0785	18 9 47.5	0.818
16	17 49 23.29	2.0794	18 10 34.0	0.735
17	17 51 28.08	2.0803	18 11 15.6	0.651
18	17 53 32.92	2.0812	18 11 52.1	0.567
19	17 55 37.82	2.0820	18 12 23.6	0.483
20	17 57 42.76	2.0828	18 12 50.1	0.399
21	17 59 47.75	2.0836	18 13 11.5	0.315
22	18 1 52.79	2.0844	18 13 27.8	0.230
23	18 3 57.88	2.0852	S.18 13 39.1	0.146

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 6 3.02	2.0861	S.18 13 45.3	0.062
1	18 8 8.21	2.0868	18 13 46.5	0.023
2	18 10 13.44	2.0875	18 13 42.6	0.108
3	18 12 18.71	2.0883	18 13 33.6	0.193
4	18 14 24.03	2.0891	18 13 19.5	0.277
5	18 16 29.40	2.0900	18 13 0.3	0.362
6	18 18 34.83	2.0908	18 12 36.0	0.447
7	18 20 40.30	2.0914	18 12 6.6	0.532
8	18 22 45.80	2.0919	18 11 32.1	0.617
9	18 24 51.33	2.0926	18 10 52.5	0.702
10	18 26 56.91	2.0933	18 10 7.8	0.788
11	18 29 2.53	2.0940	18 9 18.0	0.873
12	18 31 8.19	2.0947	18 8 23.1	0.958
13	18 33 13.89	2.0953	18 7 23.1	1.044
14	18 35 19.63	2.0959	18 6 17.9	1.129
15	18 37 25.40	2.0966	18 5 7.6	1.215
16	18 39 31.21	2.0972	18 3 52.1	1.300
17	18 41 37.06	2.0978	18 2 31.5	1.385
18	18 43 42.95	2.0985	18 1 5.8	1.471
19	18 45 48.89	2.0992	17 59 35.0	1.557
20	18 47 54.86	2.0997	17 57 59.0	1.642
21	18 50 0.85	2.1001	17 56 17.9	1.728
22	18 52 6.87	2.1006	17 54 31.7	1.813
23	18 54 12.93	2.1012	17 52 40.3	1.899
24	18 56 19.02	2.1017	S.17 50 43.7	1.985

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	4	6	15.7
☽ First Quarter, ...	11	13	40.3
○ Full Moon, ...	18	7	41.0
☾ Last Quarter, ...	25	23	32.2

	d	h
☾ Perigee, ...	14	22.8
☾ Apogee, ...	26	19.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica	W.	73° 41′ 43″	3027	75° 11′ 22″	3021	76° 41′ 10″	3014	78° 11′ 6″	3006
	Saturn	W.	42 5 31	3038	43 34 57	3030	45 4 32	3024	46 34 15	3016
	Antares	W.	29 6 38	3266	30 31 29	3238	31 56 54	3212	33 22 49	3189
	Sun	E.	37 5 33	3417	35 43 36	3411	34 21 32	3405	32 59 21	3399
6	Sun	W.	20 29 42	3069	21 58 32	3052	23 27 41	3037	24 57 8	3023
	a Arietis	E.	58 19 33	2834	56 45 49	2831	55 12 2	2830	53 38 13	2830
	Aldebaran	E.	90 20 9	2663	88 42 40	2655	87 4 59	2646	85 27 6	2638
	Mars	E.	124 9 48	2686	122 32 50	2675	120 55 37	2665	119 18 10	2655
7	Sun	W.	32 28 22	2964	33 59 20	2954	35 30 32	2943	37 1 56	2933
	a Arietis	E.	45 49 24	2843	44 15 52	2850	42 42 29	2859	41 9 17	2870
	Aldebaran	E.	77 14 53	2596	75 35 52	2588	73 56 40	2580	72 17 17	2572
	Mars	E.	111 7 36	2607	109 28 52	2599	107 49 55	2591	106 10 46	2582
	Pollux	E.	120 20 56	2708	118 44 27	2696	117 7 42	2685	115 30 42	2675
8	Sun	W.	44 42 4	2885	46 14 42	2876	47 47 32	2867	49 20 33	2858
	a Arietis	E.	33 28 7	2974	31 57 22	3010	30 27 22	3055	28 58 17	3108
	Aldebaran	E.	63 57 38	2532	62 17 9	2525	60 36 30	2517	58 55 40	2509
	Mars	E.	97 52 15	2542	96 12 0	2535	94 31 35	2527	92 51 0	2520
	Pollux	E.	107 22 12	2624	105 43 50	2615	104 5 16	2606	102 26 29	2597
9	Sun	W.	57 8 29	2814	58 42 38	2806	60 16 58	2796	61 51 28	2789
	a Pegasi	W.	33 14 43	3388	34 37 13	3306	36 1 17	3232	37 26 48	3165
	Aldebaran	E.	50 28 49	2471	48 46 55	2463	47 4 50	2456	45 22 35	2448
	Mars	E.	84 25 33	2485	82 43 59	2479	81 2 16	2472	79 20 24	2466
	Pollux	E.	94 9 38	2556	92 29 42	2548	90 49 36	2540	89 9 19	2533
10	Sun	W.	69 46 46	2748	71 22 22	2740	72 58 9	2732	74 34 7	2724
	a Pegasi	W.	44 51 51	2924	46 23 40	2888	47 56 14	2855	49 21 31	2826
	Aldebaran	E.	36 48 41	2412	35 5 23	2405	33 21 55	2397	31 38 16	2390
	Mars	E.	70 48 54	2436	69 6 11	2431	67 23 21	2426	65 40 23	2421
	Pollux	E.	80 45 26	2499	79 4 11	2492	77 22 48	2487	75 41 16	2481
	Regulus	E.	116 53 15	2417	115 10 6	2410	113 26 45	2403	111 43 14	2396
11	Sun	W.	82 36 32	2684	84 13 33	2677	85 50 44	2669	87 28 5	2662
	a Pegasi	W.	57 24 51	2703	59 1 27	2684	60 38 30	2665	62 15 57	2648
	Mars	E.	57 3 52	2399	55 20 16	2396	53 36 36	2394	51 52 51	2391
	Pollux	E.	67 11 38	2455	65 29 22	2451	63 47 0	2447	62 4 32	2444
	Regulus	E.	103 2 59	2359	101 18 25	2352	99 33 41	2345	97 48 46	2338
12	Sun	W.	95 37 22	2625	97 15 43	2618	98 54 13	2611	100 32 53	2604
	a Pegasi	W.	70 28 34	2576	72 8 2	2564	73 47 46	2553	75 27 46	2543
	a Arietis	W.	27 23 21	2901	28 55 38	2832	30 29 24	2772	32 4 29	2719
	Mars	E.	43 13 34	2389	41 29 43	2391	39 45 55	2395	38 2 12	2400
	Pollux	E.	53 31 17	2435	51 48 32	2436	50 5 48	2437	48 23 5	2439
	Regulus	E.	89 1 44	2304	87 15 51	2298	85 29 48	2291	83 43 36	2286
13	Sun	W.	108 48 23	2574	110 27 54	2568	112 7 33	2563	113 47 19	2558
	a Pegasi	W.	83 51 2	2501	85 32 14	2494	87 13 35	2489	88 55 5	2484
	a Arietis	W.	40 14 38	2540	41 54 55	2517	43 35 45	2495	45 17 5	2476
	Mars	E.	29 26 32	2463	27 44 27	2487	26 2 55	2517	24 22 6	2558
	Pollux	E.	39 51 1	2472	38 9 9	2486	36 27 36	2503	34 46 27	2523
	Regulus	E.	74 50 25	2257	73 3 22	2252	71 16 12	2247	69 28 54	2243

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Spica	W.	79° 41′ 11″	2998	81° 11′ 26″	2990	82° 41′ 56″	2982	84° 12′ 25″	2974
	Saturn	W.	48 4 8	3009	49 34 10	3001	51 4 21	2993	52 34 43	2985
	Antares	W.	34 49 11	3167	36 16 0	3147	37 43 13	3128	39 10 49	3110
	Sun	E.	31 37 3	3393	30 14 38	3386	28 52 6	3380	27 29 27	3374
6	Sun	W.	26 26 52	3010	27 56 52	2997	29 27 8	2986	30 57 38	2975
	α Arietis	E.	52 4 23	2830	50 30 34	2831	48 56 47	2834	47 23 3	2838
	Aldebaran	E.	83 49 2	2629	82 10 47	2621	80 32 20	2612	78 53 42	2604
	Mars	E.	117 40 30	2645	116 2 36	2635	114 24 29	2626	112 46 9	2616
7	Sun	W.	38 33 33	2923	40 5 22	2913	41 37 24	2904	43 9 38	2894
	α Arietis	E.	39 36 19	2883	38 3 39	2901	36 31 21	2920	34 59 29	2945
	Aldebaran	E.	70 37 43	2564	68 57 58	2556	67 18 2	2548	65 37 56	2540
	Mars	E.	104 31 26	2574	102 51 55	2566	101 12 13	2558	99 32 19	2550
	Pollux	E.	113 53 28	2664	112 16 0	2654	110 38 18	2643	109 0 22	2634
8	Sun	W.	50 53 46	2849	52 27 10	2841	54 0 45	2832	55 34 31	2823
	α Arietis	E.	27 30 17	3174	26 3 37	3255	24 38 33	3354	23 15 24	3485
	Aldebaran	E.	57 14 39	2501	55 33 27	2494	53 52 5	2486	52 10 32	2479
	Mars	E.	91 10 14	2512	89 29 18	2506	87 48 13	2499	86 6 58	2492
	Pollux	E.	100 47 30	2588	99 8 19	2580	97 28 56	2572	95 49 23	2564
9	Sun	W.	63 26 10	2781	65 1 3	2773	66 36 6	2766	68 11 21	2758
	α Pegasi	W.	38 53 39	3106	40 21 41	3055	41 50 46	3006	43 20 51	2962
	Aldebaran	E.	43 40 9	2441	41 57 33	2433	40 14 46	2426	38 31 49	2419
	Mars	E.	77 38 23	2460	75 56 13	2454	74 13 55	2448	72 31 29	2442
	Pollux	E.	87 28 52	2526	85 48 15	2519	84 7 28	2512	82 26 32	2505
10	Sun	W.	76 10 15	2716	77 46 33	2708	79 23 2	2700	80 59 42	2693
	α Pegasi	W.	51 3 26	2796	52 37 59	2771	54 13 5	2747	55 48 43	2725
	Aldebaran	E.	29 54 27	2383	28 10 28	2376	26 26 19	2369	24 41 59	2362
	Mars	E.	63 57 18	2416	62 14 5	2411	60 30 46	2407	58 47 22	2403
	Pollux	E.	73 59 35	2475	72 17 47	2470	70 35 51	2465	68 53 48	2460
	Regulus	E.	109 59 32	2388	108 15 39	2380	106 31 36	2373	104 47 23	2366
11	Sun	W.	89 5 36	2655	90 43 18	2647	92 21 9	2640	93 59 11	2632
	α Pegasi	W.	63 53 47	2652	65 31 59	2626	67 10 32	2602	68 49 24	2580
	Mars	E.	50 9 3	2389	48 25 12	2388	46 41 20	2387	44 57 26	2387
	Pollux	E.	60 22 0	2441	58 39 23	2438	56 56 43	2437	55 14 1	2436
	Regulus	E.	96 3 42	2331	94 18 27	2324	92 38 2	2317	90 47 28	2311
12	Sun	W.	102 11 42	2598	103 50 39	2592	105 29 45	2585	107 9 0	2580
	α Pegasi	W.	77 8 0	2556	78 48 28	2534	80 29 8	2515	82 9 59	2498
	α Arietis	W.	33 40 43	2675	35 17 58	2635	36 56 5	2600	38 35 0	2569
	Mars	E.	36 18 37	2408	34 35 13	2416	32 52 2	2428	31 9 7	2443
	Pollux	E.	46 40 26	2443	44 57 52	2446	43 15 25	2454	41 33 7	2462
	Regulus	E.	81 57 15	2279	80 10 45	2274	78 24 7	2268	76 37 20	2262
13	Sun	W.	115 27 12	2553	117 7 12	2548	118 47 18	2544	120 27 30	2540
	α Pegasi	W.	90 36 41	2479	92 18 23	2475	94 0 11	2472	95 42 3	2470
	α Arietis	W.	46 58 53	2457	48 41 7	2441	50 23 45	2426	52 6 43	2412
	Mars	E.	22 42 13	2611	21 3 33	2678	19 26 23	2764	17 51 8	2876
	Pollux	E.	33 5 45	2546	31 25 35	2576	29 46 6	2612	28 7 28	2656
	Regulus	E.	67 41 30	2238	65 53 59	2234	64 6 22	2230	62 18 39	2227

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Sun	W.	122° 7′ 47″	2536	123° 48′ 10″	2533	125° 28′ 37″	2530	127° 9′ 9″	2527
	α Pegasi	W.	97 23 58	2469	99 5 54	2468	100 47 52	2469	102 29 50	2470
	α Arietis	W.	53 50 1	2400	55 33 35	2389	57 17 25	2380	59 1 29	2371
	Aldebaran	W.	19 38 21	2217	21 26 23	2214	23 14 30	2211	25 2 40	2208
	Regulus	E.	60 30 51	2223	58 42 58	2220	56 55 1	2218	55 7 0	2215
	Spica	E.	114 0 25	2233	112 12 46	2229	110 25 2	2226	108 37 13	2223
15	α Pegasi	W.	110 58 48	2489	112 40 17	2497	114 21 35	2506	116 2 40	2517
	α Arietis	W.	67 44 36	2339	69 29 38	2336	71 14 45	2333	72 59 56	2331
	Aldebaran	W.	34 4 24	2200	35 52 51	2200	37 41 18	2200	39 29 45	2200
	Regulus	E.	46 6 13	2210	44 18 1	2210	42 29 48	2211	40 41 37	2212
	Spica	E.	99 37 12	2214	97 49 5	2214	96 0 58	2214	94 12 51	2214
16	α Arietis	W.	81 46 17	2331	83 31 31	2333	85 16 42	2336	87 1 49	2340
	Aldebaran	W.	48 31 42	2206	50 19 57	2212	52 8 7	2215	53 56 12	2219
	Mars	W.	17 25 42	2782	19 0 33	2692	20 37 23	2620	22 15 51	2564
	Regulus	E.	31 41 24	2227	29 53 37	2233	28 5 57	2239	26 18 27	2246
	Spica	E.	85 12 34	2222	83 24 39	2225	81 36 49	2229	79 49 5	2233
	Saturn	E.	117 21 10	2220	115 33 13	2224	113 45 21	2227	111 57 33	2231
17	α Arietis	W.	95 45 44	2368	97 30 5	2375	99 14 14	2384	100 58 12	2394
	Aldebaran	W.	62 54 55	2245	64 42 14	2252	66 29 24	2260	68 16 23	2267
	Mars	W.	30 42 15	2432	32 25 3	2421	34 8 8	2413	35 51 24	2408
	Pollux	W.	22 7 2	2882	23 39 45	2803	25 14 9	2741	26 49 54	2693
	Spica	E.	70 52 8	2261	69 5 11	2268	67 18 24	2276	65 31 49	2283
	Saturn	E.	103 0 13	2257	101 13 10	2264	99 26 16	2270	97 39 33	2278
	Antares	E.	116 24 28	2322	114 39 1	2326	112 53 39	2331	111 8 25	2337
18	α Arietis	W.	109 34 23	2450	111 16 47	2464	112 58 51	2478	114 40 35	2493
	Aldebaran	W.	77 8 18	2312	78 54 0	2322	80 39 27	2333	82 24 39	2344
	Mars	W.	44 28 30	2412	46 11 48	2417	47 54 58	2423	49 38 0	2430
	Pollux	W.	35 0 56	2569	36 40 33	2559	38 20 25	2551	40 0 27	2548
	Spica	E.	56 42 5	2332	54 56 52	2343	53 11 55	2355	51 27 14	2366
	Saturn	E.	88 48 57	2322	87 3 30	2333	85 18 18	2343	83 33 21	2354
	Antares	E.	102 24 36	2375	100 40 25	2384	98 56 28	2394	97 12 45	2405
19	Aldebaran	W.	91 6 29	2404	92 49 57	2417	94 33 8	2431	96 15 59	2444
	Mars	W.	58 10 22	2476	59 52 10	2487	61 33 41	2499	63 14 56	2511
	Pollux	W.	48 21 3	2555	50 1 1	2561	51 40 50	2567	53 20 30	2574
	Spica	E.	42 48 28	2435	41 5 42	2450	39 23 18	2466	37 41 17	2482
	Saturn	E.	74 52 45	2415	73 9 31	2428	71 26 35	2441	69 43 59	2455
	Antares	E.	88 38 14	2465	86 56 12	2479	85 14 29	2492	83 33 5	2507
	Venus	E.	124 32 53	2732	122 56 56	2747	121 21 18	2761	119 45 59	2776
20	Aldebaran	W.	104 45 18	2516	106 26 10	2530	108 6 40	2545	109 46 50	2561
	Mars	W.	71 36 46	2578	73 16 11	2592	74 55 17	2607	76 34 3	2620
	Pollux	W.	61 35 51	2625	63 14 13	2636	64 52 18	2649	66 30 8	2661
	Regulus	W.	24 46 51	2542	26 27 5	2554	28 7 3	2566	29 46 44	2580
	Saturn	E.	61 15 53	2527	59 35 16	2542	57 55 1	2556	56 15 6	2572
	Antares	E.	75 11 9	2582	73 31 49	2598	71 52 51	2614	70 14 16	2631
	Venus	E.	111 54 26	2855	110 21 9	2871	108 48 14	2887	107 15 39	2904
	α Aquilæ	E.	121 47 57	3124	120 20 16	3118	118 52 29	3114	117 24 37	3113
21	Mars	W.	84 42 43	2698	86 19 25	2714	87 55 46	2730	89 31 46	2746
	Pollux	W.	74 34 51	2729	76 10 52	2743	77 46 35	2758	79 22 0	2772

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
14	Sun	W.	128 49 44	2525	130 30 22	2523	132 11 3	2522	133 51 46	2521
	α Pegasi	W.	104 11 45	2472	105 53 39	2475	107 35 28	2478	109 17 11	2483
	α Arietis	W.	60 45 46	2362	62 30 15	2355	64 14 54	2350	65 59 41	2344
	Aldebaran	W.	26 50 55	2206	28 39 13	2204	30 27 35	2202	32 15 58	2201
	Regulus	E.	53 18 55	2213	51 30 47	2212	49 42 37	2211	47 54 26	2210
	Spica	E.	106 49 19	2220	105 1 21	2218	103 13 20	2216	101 25 17	2215
15	α Pegasi	W.	117 43 31	2531	119 24 1	2545	121 4 11	2563	122 43 57	2583
	α Arietis	W.	74 45 10	2330	76 30 27	2329	78 15 43	2329	80 1 0	2330
	Aldebaran	W.	41 18 12	2201	43 6 38	2202	44 55 2	2204	46 43 24	2206
	Regulus	E.	38 53 27	2214	37 5 21	2216	35 17 18	2219	33 29 18	2223
	Spica	E.	92 24 44	2214	90 36 38	2216	88 48 34	2217	87 0 32	2220
16	α Arietis	W.	88 46 50	2344	90 31 45	2349	92 16 33	2356	94 1 13	2362
	Aldebaran	W.	55 44 11	2224	57 32 3	2229	59 19 49	2234	61 7 26	2239
	Mars	W.	23 55 35	2523	25 36 17	2490	27 17 44	2465	28 59 47	2447
	Regulus	E.	24 31 8	2254	22 44 1	2264	20 57 9	2276	19 10 33	2289
	Spica	E.	78 1 26	2237	76 13 55	2243	74 26 31	2248	72 39 15	2254
	Saturn	E.	110 9 51	2235	108 22 15	2239	106 34 47	2245	104 47 26	2250
17	α Arietis	W.	102 41 56	2403	104 25 26	2414	106 8 41	2425	107 51 41	2437
	Aldebaran	W.	70 3 11	2275	71 49 47	2284	73 36 11	2293	75 22 21	2302
	Mars	W.	37 34 47	2405	39 18 14	2405	41 1 41	2406	42 45 7	2408
	Pollux	W.	28 26 43	2656	30 4 23	2625	31 42 44	2601	33 21 38	2583
	Spica	E.	63 45 26	2292	61 59 15	2302	60 13 17	2311	58 27 34	2321
	Saturn	E.	95 53 1	2286	94 6 41	2294	92 20 33	2303	90 34 38	2313
	Antares	E.	109 23 19	2343	107 38 22	2350	105 53 35	2357	104 9 0	2366
18	α Arietis	W.	116 21 58	2509	118 2 59	2526	119 43 36	2543	121 23 48	2562
	Aldebaran	W.	84 9 35	2355	85 54 14	2367	87 38 37	2379	89 22 42	2391
	Mars	W.	51 20 53	2438	53 3 33	2446	54 46 2	2455	56 28 19	2465
	Pollux	W.	41 40 33	2545	43 20 42	2546	45 0 52	2547	46 41 0	2551
	Spica	E.	49 42 51	2379	47 58 46	2392	46 15 0	2406	44 31 34	2420
	Saturn	E.	81 48 40	2366	80 4 15	2377	78 20 8	2389	76 36 17	2402
	Antares	E.	95 29 18	2417	93 46 7	2428	92 3 12	2440	90 20 34	2453
19	Aldebaran	W.	97 58 30	2458	99 40 42	2472	101 22 34	2487	103 4 6	2501
	Mars	W.	64 55 54	2524	66 36 34	2537	68 16 57	2550	69 57 1	2564
	Pollux	W.	55 0 0	2583	56 39 18	2593	58 18 23	2603	59 57 14	2613
	Spica	E.	35 59 39	2500	34 18 25	2518	32 37 37	2536	30 57 14	2555
	Saturn	E.	68 1 42	2469	66 19 44	2483	64 38 7	2497	62 56 50	2512
	Antares	E.	81 52 1	2521	80 11 17	2535	78 30 53	2551	76 50 50	2566
	Venus	E.	118 11 0	2792	116 36 21	2807	115 2 2	2823	113 28 4	2838
20	Aldebaran	W.	111 26 39	2576	113 6 7	2591	114 45 14	2607	116 24 0	2623
	Mars	W.	78 12 28	2637	79 50 33	2652	81 28 17	2667	83 5 40	2683
	Pollux	W.	68 7 40	2674	69 44 55	2687	71 21 52	2701	72 58 31	2715
	Regulus	W.	31 26 6	2593	33 5 10	2607	34 43 55	2621	36 22 22	2635
	Saturn	E.	54 35 33	2588	52 56 20	2603	51 17 29	2618	49 38 59	2634
	Antares	E.	68 36 3	2648	66 58 13	2665	65 20 46	2682	63 43 42	2700
	Venus	E.	105 43 25	2921	104 11 33	2938	102 40 3	2955	101 8 53	2972
	α Aquilæ	E.	115 56 42	3113	114 28 48	3114	113 0 55	3116	111 33 5	3120
21	Mars	W.	91 7 25	2762	92 42 43	2778	94 17 40	2794	95 52 16	2809
	Pollux	W.	80 57 5	2786	82 31 51	2801	84 6 18	2815	85 40 26	2830

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	Regulus	W.	38° 0′ 31″	2650	39° 38′ 18″	2665	41° 15′ 46″	2679	42° 52′ 54″	2694
	Saturn	E.	48 0 51	2650	46 23 4	2666	44 45 38	2681	43 8 33	2697
	Antares	E.	62 7 2	2718	60 30 45	2736	58 54 53	2754	57 19 25	2772
	Venus	E.	99 38 5	2989	88 7 39	3006	96 37 34	3023	95 7 50	3040
	a Aquilæ	E.	110 5 20	3126	108 37 41	3131	107 10 10	3138	105 42 47	3146
22	Mars	W.	97 26 32	2825	99 0 28	2840	100 34 4	2856	102 7 19	2872
	Pollux	W.	87 14 15	2845	88 47 45	2859	90 20 56	2874	91 53 49	2888
	Regulus	W.	50 53 37	2767	52 28 48	2782	54 3 40	2796	55 38 13	2810
	Saturn	E.	35 8 23	2775	33 33 24	2792	31 58 44	2807	30 24 26	2822
	Antares	E.	49 28 15	2869	47 55 17	2890	46 22 45	2911	44 50 39	2932
	Venus	E.	87 44 21	3124	86 16 40	3140	84 49 19	3156	83 22 17	3173
	a Aquilæ	E.	98 28 32	3197	97 2 19	3208	95 36 19	3220	94 10 34	3233
	Sun	E.	134 31 42	3121	133 3 58	3137	131 36 33	3153	130 9 27	3168
23	Mars	W.	109 48 42	2946	111 20 2	2961	112 51 4	2975	114 21 48	2989
	Pollux	W.	99 33 36	2960	101 4 39	2973	102 35 26	2987	104 5 55	3000
	Regulus	W.	63 26 32	2877	64 59 20	2890	66 31 52	2901	68 4 9	2914
	Antares	E.	37 17 11	3049	35 47 59	3076	34 19 20	3104	32 51 15	3134
	Venus	E.	76 11 49	3248	74 46 37	3262	73 21 41	3276	71 57 2	3290
	a Aquilæ	E.	87 5 39	3300	85 41 28	3316	84 17 35	3330	82 53 58	3346
	Sun	E.	122 58 24	3241	121 33 3	3254	120 7 58	3268	118 43 9	3281
24	Regulus	W.	75 41 50	2969	77 12 42	2979	78 43 21	2989	80 13 48	2997
	Spica	W.	22 30 58	3052	24 0 6	3053	25 29 13	3054	26 58 19	3056
	Venus	E.	64 57 35	3352	63 34 24	3364	62 11 26	3374	60 48 40	3384
	a Aquilæ	E.	76 0 21	3424	74 38 32	3441	73 17 3	3458	71 55 52	3476
	Sun	E.	111 42 42	3340	110 19 17	3351	108 56 5	3362	107 33 5	3372
25	Regulus	W.	87 43 27	3036	89 12 55	3043	90 42 16	3048	92 11 29	3056
	Spica	W.	34 22 57	3073	35 51 40	3076	37 20 19	3080	38 48 54	3082
	Venus	E.	53 57 36	3430	52 35 53	3437	51 14 18	3444	49 52 51	3450
	a Aquilæ	E.	65 14 54	3566	63 55 45	3588	62 36 59	3610	61 18 35	3632
	Sun	E.	100 40 39	3413	99 18 37	3420	97 56 43	3426	96 34 56	3432
26	Regulus	W.	99 36 8	3073	101 4 50	3076	102 33 29	3078	104 2 5	3079
	Spica	W.	46 10 57	3094	47 39 14	3096	49 7 30	3096	50 35 44	3097
	Saturn	W.	13 50 0	3126	15 17 38	3120	16 45 23	3115	18 13 14	3111
	Venus	E.	43 7 11	3475	41 46 19	3478	40 25 30	3480	39 4 44	3483
	a Aquilæ	E.	54 52 47	3756	53 36 59	3786	52 21 42	3817	51 6 57	3851
	Sun	E.	89 47 29	3453	88 26 12	3456	87 4 59	3457	85 43 47	3459
27	Regulus	W.	111 24 52	3080	112 53 26	3078	114 22 2	3077	115 50 41	3074
	Spica	W.	57 56 56	3092	59 25 15	3091	60 53 36	3088	62 22 0	3085
	Saturn	W.	25 33 36	3094	27 1 53	3091	28 30 14	3087	29 58 38	3084
	Antares	W.	15 12 22	4163	16 22 20	3939	17 35 0	3804	18 49 58	3698
	Venus	E.	32 21 25	3488	31 0 47	3487	29 40 8	3486	28 19 28	3485
	a Aquilæ	E.	45 2 36	4060	43 51 55	4113	42 42 5	4171	41 33 11	4236
	Sun	E.	78 58 4	3459	77 36 54	3457	76 15 42	3454	74 54 28	3452
28	Spica	W.	69 45 5	3064	71 13 59	3059	72 43 0	3053	74 12 7	3047
	Saturn	W.	37 22 0	3060	38 50 59	3054	40 20 4	3047	41 49 18	3041
	Antares	W.	25 27 18	3386	26 49 51	3349	28 13 6	3314	29 37 0	3283
	Sun	E.	68 7 17	3431	66 45 35	3425	65 23 46	3419	64 1 51	3412

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Regulus	W.	44° 29′ 41″	2709	46° 6′ 9″	2724	47° 42′ 18″	2738	49° 18′ 7″	2753
	Saturn	E.	41 31 49	2713	39 55 26	2729	38 19 25	2744	36 43 44	2760
	Antares	E.	55 44 21	2792	54 9 42	2811	52 35 27	2830	51 1 38	2849
	Venus	E.	93 38 26	3057	92 9 24	3074	90 40 43	3091	89 12 22	3107
	α Aquilæ	E.	104 15 33	3156	102 48 30	3166	101 21 38	3174	99 54 59	3186
22	Mars	W.	103 40 14	2887	105 12 49	2901	106 45 6	2916	108 17 3	2931
	Pollux	W.	93 26 22	2903	94 58 38	2917	96 30 35	2931	98 2 14	2946
	Regulus	W.	57 12 29	2824	58 46 26	2838	60 20 5	2851	61 53 27	2864
	Saturn	E.	28 50 27	2838	27 16 48	2854	25 43 30	2869	24 10 31	2885
	Antares	E.	43 19 1	2954	41 47 50	2977	40 17 8	3000	38 46 54	3024
	Venus	E.	81 55 35	3188	80 29 11	3204	79 3 6	3219	77 37 19	3233
	α Aquilæ	E.	92 45 3	3246	91 19 48	3259	99 54 49	3273	88 30 6	3287
	Sun	E.	128 42 39	3183	127 16 9	3198	125 49 57	3212	124 24 2	3226
23	Mars	W.	115 52 15	3003	117 22 24	3017	118 52 16	3030	120 21 52	3043
	Pollux	W.	105 36 8	3013	107 6 5	3026	108 35 46	3039	110 5 11	3051
	Regulus	W.	69 36 10	2926	71 7 56	2937	72 39 27	2948	74 10 45	2959
	Antares	E.	31 23 47	3168	29 56 59	3204	28 30 54	3242	27 5 34	3284
	Venus	E.	70 32 39	3303	69 8 31	3316	67 44 38	3329	66 20 59	3341
	α Aquilæ	E.	81 30 39	3361	80 7 37	3376	78 44 54	3392	77 22 28	3408
	Sun	E.	117 18 35	3294	115 54 15	3306	114 30 10	3318	113 6 20	3330
24	Regulus	W.	81 44 4	3006	83 14 10	3014	84 44 5	3022	86 13 51	3029
	Spica	W.	28 27 22	3059	29 56 22	3062	31 25 18	3065	32 54 10	3069
	Venus	E.	59 26 5	3394	58 3 42	3404	56 41 30	3413	55 19 29	3422
	α Aquilæ	E.	70 35 0	3493	69 14 28	3511	67 54 16	3530	66 34 24	3549
	Sun	E.	106 10 15	3381	104 47 37	3390	103 25 8	3398	102 2 49	3406
25	Regulus	W.	93 40 36	3056	95 9 36	3063	96 38 31	3067	98 7 22	3070
	Spica	W.	40 17 24	3085	41 45 52	3088	43 14 16	3091	44 42 38	3092
	Venus	E.	48 31 31	3456	47 10 18	3461	45 49 10	3466	44 28 8	3471
	α Aquilæ	E.	60 0 35	3654	58 42 59	3677	57 25 48	3703	56 9 4	3728
	Sun	E.	95 13 16	3438	93 51 42	3442	92 30 13	3446	91 8 49	3450
26	Regulus	W.	105 30 40	3081	106 59 13	3081	108 27 46	3081	109 56 19	3081
	Spica	W.	52 3 58	3097	53 32 11	3096	55 0 25	3096	56 28 39	3095
	Saturn	W.	19 41 10	3108	21 9 10	3104	22 37 15	3101	24 5 24	3097
	Venus	E.	37 44 1	3486	36 23 20	3487	35 2 41	3488	33 42 3	3488
	α Aquilæ	E.	49 52 47	3886	48 39 13	3924	47 26 17	3965	46 14 4	4011
	Sun	E.	84 22 37	3460	83 1 29	3461	81 40 21	3461	80 19 13	3460
27	Regulus	W.	117 19 22	3071	118 48 7	3068	120 16 55	3064	121 45 48	3060
	Spica	W.	63 50 27	3082	65 18 59	3078	66 47 36	3073	68 16 18	3069
	Saturn	W.	31 27 8	3079	32 55 42	3075	34 24 22	3070	35 53 8	3065
	Antares	W.	20 6 48	3610	21 25 11	3542	22 44 49	3480	24 5 35	3431
	Venus	E.	26 58 47	3483	25 38 3	3481	24 17 18	3480	22 56 31	3478
	α Aquilæ	E.	40 25 18	4306	39 18 31	4386	38 12 56	4474	37 8 41	4572
	Sun	E.	73 33 10	3449	72 11 48	3446	70 50 23	3441	69 28 53	3436
28	Spica	W.	75 41 22	3040	77 10 46	3033	78 40 18	3026	80 9 59	3018
	Saturn	W.	43 18 40	3034	44 48 10	3027	46 17 50	3019	47 47 39	3011
	Antares	W.	31 1 31	3256	32 26 34	3231	33 52 6	3209	35 18 5	3187
	Sun	E.	62 39 48	3406	61 17 38	3398	59 55 18	3390	58 32 50	3381

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	22 47 56.31	9.368	S. 7 38 31.9	56.94	16 10.40	65.44	12 36.91	0.488
Sat.	2	22 51 40.85	9.346	7 15 42.2	57.21	16 10.15	65·36	12 24.94	0.509
Sun.	3	22 55 24.90	9.327	6 52 46.1	57.46	16 9.90	65.29	12 12.47	0.529
Mon.	4	22 59 8.48	9.308	6 29 44.3	57.69	16 9.65	65.22	11 59.53	0.548
Tues.	5	23 2 51.60	9.290	6 6 37.1	57.91	16 9.39	65.16	11 46.15	0.566
Wed.	6	23 6 34.30	9.272	5 43 24.9	58.11	16 9.14	65.10	11 32.33	0.584
Thur.	7	23 10 16.58	9.255	5 20 8.2	58.30	16 8.88	65.04	11 18.10	0.601
Fri.	8	23 13 58.46	9.238	4 56 47.2	58.47	16 8.63	64.98	11 3.46	0.618
Sat.	9	23 17 39.95	9.222	4 33 22.3	58.62	16 8.37	64.93	10 48.44	0.634
Sun.	10	23 21 21.07	9.207	4 9 53.9	58.75	16 8.12	64.88	10 33.05	0.649
Mon.	11	23 25 1.82	9.192	3 46 22.7	58.87	16 7.86	64.83	10 17.29	0.664
Tues.	12	23 28 42.23	9.178	3 22 49.0	58.97	16 7.60	64.78	10 1.19	0.677
Wed.	13	23 32 22.32	9.165	2 59 12.9	59.06	16 7.34	64.74	9 44.77	0.690
Thur.	14	23 36 2.11	9.153	2 35 34.8	59.13	16 7.08	64.70	9 28.05	0.702
Fri.	15	23 39 41.62	9.142	2 11 55.3	59.19	16 6.82	64.66	9 11.05	0.713
Sat.	16	23 43 20.87	9.132	1 48 14.8	59.23	16 6.56	64.63	8 53.80	0.723
Sun.	17	23 46 59.90	9.123	1 24 33.4	59.25	16 6.29	64.60	8 36.33	0.732
Mon.	18	23 50 38.73	9.115	1 0 51.5	59.26	16 6.02	64.57	8 18.66	0.740
Tues.	19	23 54 17.37	9.108	0 37 9.6	59.26	16 5.75	64.55	8 0.80	0.748
Wed.	20	23 57 55.84	9.102	S. 0 13 28.0	59.24	16 5.48	64.53	7 42.77	0.755
Thur.	21	0 1 34.18	9.097	N. 0 10 13.1	59.21	16 5.20	64.51	7 24.60	0.760
Fri.	22	0 5 12.40	9.093	0 33 53.3	59.16	16 4.92	64.49	7 6.32	0.764
Sat.	23	0 8 50.54	9.089	0 57 32.1	59.10	16 4.64	64.48	6 47.96	0.767
Sun.	24	0 12 28.61	9.087	1 21 9.3	59.02	16 4.36	64.47	6 29.53	0.769
Mon.	25	0 16 6.64	9.086	1 44 44.5	58.93	16 4.08	64.46	6 11.06	0.770
Tues.	26	0 19 44.65	9.086	2 8 17.3	58.83	16 3.80	64.46	5 52.58	0.770
Wed.	27	0 23 22.66	9.086	2 31 47.4	58.71	16 3.51	64.46	5 34.09	0.770
Thur.	28	0 27 0.71	9.088	2 55 14.6	58.58	16 3.23	64.46	5 15.63	0.768
Fri.	29	0 30 38.80	9.090	3 18 38.4	58.43	16 2.94	64.47	4 57.22	0.766
Sat.	30	0 34 16.95	9.093	3 41 58.5	58.27	16 2.66	64.48	4 38.86	0.763
Sun.	31	0 37 55.18	9.097	4 5 14.6	58.09	16 2.37	64.49	4 20.59	0.759
Mon.	32	0 41 33.51	9.102	N. 4 28 26.2	57.90	16 2.09	64.50	4 2.42	0.755

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	22 47 54.33	9.368	S. 7 38 43.9	56.94	12 37.01	0.488	22 35 17.32
Sat.	2	22 51 38.91	9.346	7 15 54.0	57.21	12 25.04	0.509	22 39 13.87
Sun.	3	22 55 23.00	9.327	6 52 57.8	57.46	12 12.57	0.529	22 43 10.43
Mon.	4	22 59 6.62	9.308	6 29 55.8	57.69	11 59.64	0.548	22 47 6.98
Tues.	5	23 2 49.79	9.290	6 6 48.4	57.91	11 46.26	0.566	22 51 3.53
Wed.	6	23 6 32.52	9.272	5 43 36.1	58.11	11 32.44	0.584	22 55 0.08
Thur.	7	23 10 14.84	9.255	5 20 19.2	58.30	11 18.21	0.601	22 58 56.63
Fri.	8	23 13 56.76	9.238	4 56 58.0	58.47	11 3.57	0.618	23 2 53.19
Sat.	9	23 17 38.29	9.222	4 33 32.8	58.62	10 48.55	0.634	23 6 49.74
Sun.	10	23 21 19.45	9.207	4 10 4.2	58.75	10 33.16	0.649	23 10 46.29
Mon.	11	23 25 0.24	9.192	3 46 32.8	58.87	10 17.40	0.664	23 14 42.84
Tues.	12	23 28 40.69	9.178	3 22 58.9	58.97	10 1.30	0.677	23 18 39.39
Wed.	13	23 32 20.82	9.165	2 59 22.6	59.06	9 44.88	0.690	23 22 35.94
Thur.	14	23 36 0.66	9.153	2 35 44.2	59.13	9 28.16	0.702	23 26 32.50
Fri.	15	23 39 40.22	9.142	2 12 4.4	59.19	9 11.17	0.713	23 30 29.05
Sat.	16	23 43 19.52	9.132	1 48 23.6	59.23	8 53.92	0.723	23 34 25.60
Sun.	17	23 46 58.59	9.123	1 24 41.9	59.25	8 36.44	0.732	23 38 22.15
Mon.	18	23 50 37.46	9.115	1 0 59.7	59.26	8 18.76	0.740	23 42 18.70
Tues.	19	23 54 16.15	9.108	0 37 17.5	59.26	8 0.90	0.748	23 46 15.25
Wed.	20	23 57 54.67	9.102	S. 0 13 35.6	59.24	7 42.88	0.755	23 50 11.80
Thur.	21	0 1 33.05	9.097	N. 0 10 5.8	59.21	7 24.69	0.760	23 54 8.36
Fri.	22	0 5 11.32	9.093	0 33 46.3	59.16	7 6.41	0.764	23 58 4.91
Sat.	23	0 8 49.51	9.089	0 57 25.4	59.10	6 48.05	0.767	0 2 1.46
Sun.	24	0 12 27.62	9.087	1 21 2.9	59.02	6 29.61	0.769	0 5 58.01
Mon.	25	0 16 5.70	9.086	1 44 38.4	58.93	6 11.14	0.770	0 9 54.56
Tues.	26	0 19 43.77	9.086	2 8 11.5	58.83	5 52.65	0.770	0 13 51.12
Wed.	27	0 23 21.83	9.086	2 31 42.0	58.71	5 34.16	0.770	0 17 47.67
Thur.	28	0 26 59.92	9.088	2 55 9.5	58.58	5 15.70	0.768	0 21 44.22
Fri.	29	0 30 38.05	9.090	3 18 33.6	58.43	4 57.28	0.766	0 25 40.77
Sat.	30	0 34 16.24	9.093	3 41 54.0	58.27	4 38.92	0.763	0 29 37.32
Sun.	31	0 37 54.52	9.097	4 5 10.4	58.09	4 20.64	0.759	0 33 33.88
Mon.	32	0 41 32.90	9.102	N. 4 28 22.3	57.90	4 2.47	0.755	0 37 30.43

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h. h m s
1	60	340° 28′ 37″.7	28′ 30″.5	150″.46	+0″.62	9.9962270	46.4	1 24 28.80
2	61	341 28 47.9	28 40.6	150.39	0.56	.9963389	46.7	1 20 32.89
3	62	342 28 56.4	28 49.0	150.32	0.47	.9964514	46.9	1 16 36.99
4	63	343 29 3.1	28 55.6	150.25	0.36	.9965644	47.1	1 12 41.08
5	64	344 29 8.1	29 0.5	150.17	0.24	.9966778	47.3	1 8 45.18
6	65	345 29 11.2	29 3.5	150.09	+0.10	.9967915	47.5	1 4 49.28
7	66	346 29 12.4	29 4.6	150.01	—0.04	.9969056	47.6	1 0 53.37
8	67	347 29 11.6	29 3.7	149.93	0.17	.9970199	47.8	0 56 57.46
9	68	348 29 8.7	29 0.7	149.84	0.28	.9971346	47.9	0 53 1.55
10	69	349 29 3.7	28 55.6	149.75	0.37	.9972497	48.0	0 49 5.64
11	70	350 28 56.6	28 48.5	149.66	0.44	.9973652	48.2	0 45 9.73
12	71	351 28 47.2	28 39.0	149.57	0.49	.9974811	48.4	0 41 13.83
13	72	352 28 35.5	28 27.2	149.47	0.51	.9975975	48.7	0 37 17.93
14	73	353 28 21.5	28 13.1	149.38	0.49	.9977147	49.0	0 33 22.03
15	74	354 28 5.3	27 56.8	149.28	0.44	.9978327	49.3	0 29 26.12
16	75	355 27 46.8	27 38.3	149.19	0.35	.9979516	49.7	0 25 30.22
17	76	356 27 26.0	27 17.4	149.09	0.25	.9980714	50.1	0 21 34.31
18	77	357 27 3.1	26 54.4	149.00	0.14	.9981922	50.5	0 17 38.40
19	78	358 26 38.0	26 29.2	148.91	—0.01	.9983139	50.9	0 13 42.50
20	79	359 26 10.9	26 2.0	148.82	+0.13	.9984366	51.4	0 9 46.59
21	80	0 25 41.7	25 32.8	148.74	0.26	.9985603	51.8	0 5 50.68
22	81	1 25 10.6	25 1.6	148.66	0.39	.9986851	52.2	{ 0 1 54.77 { 23 57 58.86
23	82	2 24 37.6	24 28.5	148.59	0.50	.9988108	52.6	23 54 2.96
24	83	3 24 2.7	23 53.5	148.51	0.59	.9989373	52.9	23 50 7.06
25	84	4 23 25.9	23 16.6	148.43	0.65	.9990644	53.1	23 46 11.15
26	85	5 22 47.3	22 38.0	148.35	0.69	.9991920	53.3	23 42 15.25
27	86	6 22 6.9	21 57.5	148.28	0.70	.9993200	53.4	23 38 19.34
28	87	7 21 24.7	21 15.2	148.20	0.66	.9994481	53.4	23 34 23.44
29	88	8 20 40.8	20 31.2	148.13	0.61	.9995762	53.4	23 30 27.53
30	89	9 19 55.1	19 45.4	148.05	0.52	.9997042	53.3	23 26 31.62
31	90	10 19 7.6	18 57.9	147.98	0.43	.9998320	53.2	23 22 35.72
32	91	11 18 18.2	18 8.4	147.90	+0.31	9.9999594	53.0	23 18 39.81

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 54.5	14 57.7	54 36.2	+0.87	54 47.7	+1.04	21 1.9	2.01	24.7
2	15 1.3	15 5.4	55 1.1	1.18	55 16.1	1.31	21 50.2	2.01	25.7
3	15 9.8	15 14.5	55 32.4	1.41	55 49.7	1.48	22 38.6	2.01	26.7
4	15 19.4	15 24.5	56 7.8	1.53	56 26.4	1.55	23 27.0	2.02	27.7
5	15 29.6	15 34.6	56 45.0	1.55	57 3.4	1.51	6		28.7
6	15 39.5	15 44.1	57 21.3	1.45	57 38.3	1.38	0 15.6	2.04	0.1
7	15 48.4	15 52.5	57 54.3	1.28	58 9.0	1.17	1 4.7	2.07	1.1
8	15 56.1	15 59.3	58 22.3	1.05	58 34.1	0.92	1 54.7	2.11	2.1
9	16 2.1	16 4.5	58 44.4	0.79	58 53.0	0.66	2 46.1	2.18	3.1
10	16 6.4	16 7.9	59 0.2	0.53	59 5.9	0.41	3 39.2	2.25	4.1
11	16 9.1	16 9.9	59 10.2	0.30	59 13.1	+0.19	4 34.1	2.32	5.1
12	16 10.4	16 10.5	59 14.7	+0.09	59 15.2	−0.01	5 30.7	2.38	6.1
13	16 10.3	16 9.8	59 14.5	−0.10	59 12.7	0.20	6 28.3	2.40	7.1
14	16 9.0	16 7.9	59 9.7	0.29	59 5.6	0.39	7 26.0	2.38	8.1
15	16 6.4	16 4.6	59 0.3	0.49	58 53.7	0.60	8 22.8	2.33	9.1
16	16 2.5	16 0.0	58 45.9	0.71	58 36.7	0.82	9 17.9	2.25	10.1
17	15 57.1	15 53.9	58 26.2	0.93	58 14.4	1.04	10 11.0	2.16	11.1
18	15 50.3	15 46.4	58 1.2	1.15	57 46.8	1.25	11 1.9	2.08	12.1
19	15 42.2	15 37.7	57 31.3	1.33	57 14.9	1.40	11 51.0	2.02	13.1
20	15 33.1	15 28.3	56 57.8	1.45	56 40.2	1.48	12 38.7	1.97	14.1
21	15 23.4	15 18.6	56 22.4	1.49	56 4.6	1.47	13 25.5	1.94	15.1
22	15 13.8	15 9.3	55 47.2	1.43	55 30.5	1.35	14 11.9	1.93	16.1
23	15 5.0	15 1.1	55 14.7	1.26	55 0.3	1.15	14 58.1	1.93	17.1
24	14 57.6	14 54.5	54 47.4	1.00	54 36.2	0.84	15 44.5	1.94	18.1
25	14 52.0	14 50.1	54 27.1	0.67	54 20.1	0.48	16 31.3	1.96	19.1
26	14 48.9	14 48.3	54 15.5	−0.28	54 13.3	−0.08	17 18.4	1.97	20.1
27	14 48.4	14 49.2	54 13.7	+0.14	54 16.6	+0.36	18 5.9	1.98	21.1
28	14 50.7	14 52.9	54 22.2	0.57	54 30.4	0.79	18 53.5	1.98	22.1
29	14 55.8	14 59.4	54 41.1	0.99	54 54.2	1.19	19 41.2	1.99	23.1
30	15 3.6	15 8.4	55 9.7	1.38	55 27.2	1.54	20 28.9	1.99	24.1
31	15 13.7	15 19.4	55 46.6	1.68	56 7.5	1.80	21 16.9	2.01	25.1
32	15 25.4	15 31.6	56 29.7	+1.88	56 52.6	+1.93	22 5.2	2.03	26.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 56 19.02	2.1017	S.17 50 43.7	1.985
1	18 58 25.14	2.1022	17 48 42.0	2.070
2	19 0 31.29	2.1027	17 46 35.2	2.156
3	19 2 37.46	2.1032	17 44 23.3	2.241
4	19 4 43.67	2.1037	17 42 6.3	2.327
5	19 6 49.91	2.1042	17 39 44.1	2.412
6	19 8 56.17	2.1046	17 37 16.9	2.497
7	19 11 2.46	2.1051	17 34 44.5	2.582
8	19 13 8.78	2.1055	17 32 7.0	2.667
9	19 15 15.12	2.1058	17 29 24.4	2.752
10	19 17 21.48	2.1062	17 26 36.7	2.837
11	19 19 27.86	2.1066	17 23 43.9	2.922
12	19 21 34.27	2.1070	17 20 46.0	3.007
13	19 23 40.70	2.1073	17 17 43.0	3.092
14	19 25 47.15	2.1077	17 14 35.0	3.176
15	19 27 53.62	2.1080	17 11 21.9	3.261
16	19 30 0.11	2.1083	17 8 3.7	3.345
17	19 32 6.61	2.1086	17 4 40.5	3.429
18	19 34 13.14	2.1090	17 1 12.2	3.513
19	19 36 19.69	2.1093	16 57 38.9	3.597
20	19 38 26.25	2.1095	16 54 0.5	3.681
21	19 40 32.83	2.1097	16 50 17.0	3.765
22	19 42 39.42	2.1100	16 46 28.6	3.849
23	19 44 46.03	2.1102	S.16 42 35.2	3.932

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 46 52.65	2.1104	S.16 38 36.7	4.015
1	19 48 59.28	2.1107	16 34 33.3	4.099
2	19 51 5.93	2.1109	16 30 24.9	4.182
3	19 53 12.59	2.1111	16 26 11.5	4.264
4	19 55 19.27	2.1113	16 21 53.1	4.347
5	19 57 25.95	2.1115	16 17 29.8	4.429
6	19 59 32.64	2.1117	16 13 1.6	4.512
7	20 1 39.35	2.1119	16 8 28.4	4.593
8	20 3 46.07	2.1120	16 3 50.4	4.675
9	20 5 52.79	2.1122	15 59 7.4	4.756
10	20 7 59.53	2.1123	15 54 19.6	4.838
11	20 10 6.27	2.1124	15 49 26.9	4.919
12	20 12 13.02	2.1126	15 44 29.4	4.999
13	20 14 19.78	2.1127	15 39 27.0	5.080
14	20 16 26.54	2.1128	15 34 19.8	5.160
15	20 18 33.31	2.1129	15 29 7.8	5.240
16	20 20 40.09	2.1131	15 23 51.0	5.319
17	20 22 46.88	2.1131	15 18 29.4	5.399
18	20 24 53.66	2.1131	15 13 3.1	5.478
19	20 27 0.45	2.1132	15 7 32.1	5.557
20	20 29 7.25	2.1133	15 1 56.3	5.636
21	20 31 14.05	2.1134	14 56 15.9	5.713
22	20 33 20.86	2.1135	14 50 30.8	5.791
23	20 35 27.67	2.1135	14 44 41.0	5.868
	20 37 34.48	2.1136	S.14 38 46.6	5.946

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 37 34.48	2.1136	S.14 38 46.6	5.946
1	20 39 41.30	2.1136	14 32 47.6	6.023
2	20 41 48.11	2.1136	14 26 43.9	6.099
3	20 43 54.93	2.1137	14 20 35.7	6.175
4	20 46 1.76	2.1137	14 14 22.9	6.251
5	20 48 8.58	2.1138	14 8 5.6	6.326
6	20 50 15.41	2.1138	14 1 43.8	6.401
7	20 52 22.24	2.1138	13 55 17.5	6.475
8	20 54 29.07	2.1139	13 48 46.7	6.549
9	20 56 35.91	2.1139	13 42 11.5	6.623
10	20 58 42.74	2.1139	13 35 31.9	6.697
11	21 0 49.58	2.1140	13 28 47.9	6.770
12	21 2 56.42	2.1140	13 21 59.5	6.842
13	21 5 3.26	2.1141	13 15 6.8	6.914
14	21 7 10.11	2.1141	13 8 9.8	6.986
15	21 9 16.95	2.1141	13 1 8.5	7.057
16	21 11 23.80	2.1142	12 54 2.9	7.128
17	21 13 30.65	2.1142	12 46 53.1	7.198
18	21 15 37.50	2.1142	12 39 39.1	7.268
19	21 17 44.35	2.1143	12 32 20.9	7.337
20	21 19 51.21	2.1143	12 24 58.6	7.406
21	21 21 58.07	2.1143	12 17 32.2	7.474
22	21 24 4.93	2.1144	12 10 1.7	7.542
23	21 26 11.79	2.1144	S.12 2 27.1	7.610

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 28 18.66	2.1145	S.11 54 48.5	7.677
1	21 30 25.53	2.1146	11 47 5.9	7.743
2	21 32 32.41	2.1147	11 39 19.4	7.808
3	21 34 39.29	2.1147	11 31 28.9	7.873
4	21 36 46.17	2.1148	11 23 34.5	7.938
5	21 38 53.06	2.1149	11 15 36.3	8.002
6	21 40 59.96	2.1151	11 7 34.3	8.066
7	21 43 6.88	2.1152	10 59 28.5	8.128
8	21 45 13.79	2.1152	10 51 18.9	8.191
9	21 47 20.70	2.1153	10 43 5.6	8.252
10	21 49 27.62	2.1154	10 34 48.6	8.314
11	21 51 34.55	2.1156	10 26 28.0	8.374
12	21 53 41.49	2.1157	10 18 3.7	8.434
13	21 55 48.44	2.1159	10 9 35.9	8.493
14	21 57 55.40	2.1161	10 1 4.5	8.552
15	22 0 2.37	2.1163	9 52 29.6	8.610
16	22 2 9.35	2.1165	9 43 51.3	8.668
17	22 4 16.35	2.1167	9 35 9.5	8.724
18	22 6 23.36	2.1169	9 26 24.3	8.780
19	22 8 30.38	2.1171	9 17 35.8	8.836
20	22 10 37.41	2.1173	9 8 44.0	8.891
21	22 12 44.46	2.1177	8 59 48.9	8.946
22	22 14 51.53	2.1179	8 50 50.6	8.998
23	22 16 58.61	2.1182	8 41 49.2	9.051
24	22 19 5.71	2.1185	S. 8 32 44.6	9.103

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 19 5.71	2.1186	S. 8 32 44.6	9.103
1	22 21 12.83	2.1188	8 23 36.9	9.154
2	22 23 19.97	2.1191	8 14 26.1	9.205
3	22 25 27.12	2.1194	8 5 12.3	9.255
4	22 27 34.30	2.1198	7 55 55.5	9.304
5	22 29 41.50	2.1202	7 46 35.8	9.352
6	22 31 48.73	2.1206	7 37 13.3	9.399
7	22 33 55.98	2.1210	7 27 47.9	9.446
8	22 36 3.25	2.1214	7 18 19.7	9.492
9	22 38 10.55	2.1219	7 8 48.8	9.538
10	22 40 17.88	2.1223	6 59 15.2	9.583
11	22 42 25.23	2.1228	6 49 38.9	9.627
12	22 44 32.62	2.1233	6 40 0.0	9.670
13	22 46 40.03	2.1238	6 30 18.6	9.712
14	22 48 47.48	2.1244	6 20 34.6	9.753
15	22 50 54.96	2.1250	6 10 48.2	9.794
16	22 53 2.48	2.1256	6 0 59.3	9.834
17	22 55 10.03	2.1262	5 51 8.1	9.873
18	22 57 17.62	2.1268	5 41 14.6	9.911
19	22 59 25.24	2.1274	5 31 18.8	9.948
20	23 1 32.91	2.1281	5 21 20.8	9.985
21	23 3 40.61	2.1288	5 11 20.6	10.021
22	23 5 48.36	2.1295	5 1 18.3	10.055
23	23 7 56.15	2.1302	S. 4 51 14.0	10.089

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 10 3.99	2.1310	S. 4 41 7.6	10.122
1	23 12 11.87	2.1318	4 30 59.3	10.154
2	23 14 19.80	2.1326	4 20 49.1	10.186
3	23 16 27.78	2.1334	4 10 37.0	10.216
4	23 18 35.81	2.1342	4 0 23.1	10.246
5	23 20 43.89	2.1351	3 50 7.5	10.275
6	23 22 52.02	2.1360	3 39 50.2	10.302
7	23 25 0.21	2.1370	3 29 31.2	10.329
8	23 27 8.46	2.1379	3 19 10.7	10.355
9	23 29 16.76	2.1388	3 8 48.6	10.380
10	23 31 25.12	2.1398	2 58 25.0	10.404
11	23 33 33.54	2.1409	2 48 0.0	10.427
12	23 35 42.03	2.1420	2 37 33.6	10.450
13	23 37 50.58	2.1430	2 27 6.0	10.471
14	23 39 59.19	2.1441	2 16 37.1	10.491
15	23 42 7.87	2.1452	2 6 7.0	10.511
16	23 44 16.62	2.1464	1 55 35.8	10.530
17	23 46 25.44	2.1476	1 45 3.5	10.547
18	23 48 34.34	2.1488	1 34 30.1	10.564
19	23 50 43.30	2.1500	1 23 55.8	10.579
20	23 52 52.34	2.1513	1 13 20.6	10.594
21	23 55 1.46	2.1526	1 2 44.6	10.607
22	23 57 10.66	2.1539	0 52 7.8	10.620
23	23 59 19.93	2.1553	0 41 30.2	10.631
24	0 1 29.29	2.1567	S. 0 30 52.0	10.642

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 1 29.29	2.1567	S. 0 30 52.0	10.642
1	0 3 38.73	2.1581	0 20 13.2	10.652
2	0 5 48.26	2.1595	S. 0 9 33.8	10.660
3	0 7 57.87	2.1609	N. 0 1 6.1	10.668
4	0 10 7.57	2.1624	0 11 46.4	10.675
5	0 12 17.36	2.1639	0 22 27.1	10.680
6	0 14 27.24	2.1655	0 33 8.0	10.685
7	0 16 37.22	2.1671	0 43 49.2	10.688
8	0 18 47.29	2.1687	0 54 30.6	10.691
9	0 20 57.46	2.1703	1 5 12.1	10.692
10	0 23 7.73	2.1720	1 15 53.7	10.692
11	0 25 18.10	2.1737	1 26 35.2	10.692
12	0 27 28.57	2.1753	1 37 16.6	10.690
13	0 29 39.14	2.1771	1 47 57.9	10.687
14	0 31 49.82	2.1789	1 58 39.0	10.683
15	0 34 0.61	2.1807	2 9 19.9	10.679
16	0 36 11.51	2.1825	2 20 0.4	10.673
17	0 38 22.51	2.1843	2 30 40.6	10.666
18	0 40 33.63	2.1863	2 41 20.3	10.658
19	0 42 44.87	2.1882	2 51 59.5	10.649
20	0 44 56.22	2.1902	3 2 38.1	10.638
21	0 47 7.69	2.1921	3 13 16.1	10.627
22	0 49 19.27	2.1941	3 23 53.4	10.615
23	0 51 30.97	2.1961	N. 3 34 29.9	10.601

FRIDAY, 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 53 42.80	2.1982	N. 3 45 5.7	10.587
1	0 55 54.75	2.2002	3 55 40.5	10.571
2	0 58 6.83	2.2023	4 6 14.3	10.555
3	1 0 19.03	2.2044	4 16 47.0	10.537
4	1 2 31.36	2.2066	4 27 18.7	10.518
5	1 4 43.82	2.2088	4 37 49.2	10.498
6	1 6 56.42	2.2111	4 48 18.5	10.477
7	1 9 9.15	2.2133	4 58 46.5	10.455
8	1 11 22.01	2.2155	5 9 13.1	10.432
9	1 13 35.01	2.2178	5 19 38.3	10.407
10	1 15 48.14	2.2201	5 30 2.0	10.382
11	1 18 1.42	2.2225	5 40 24.1	10.356
12	1 20 14.84	2.2248	5 50 44.6	10.328
13	1 22 28.40	2.2272	6 1 3.4	10.299
14	1 24 42.10	2.2296	6 11 20.5	10.269
15	1 26 55.95	2.2321	6 21 35.7	10.238
16	1 29 9.95	2.2345	6 31 49.0	10.206
17	1 31 24.10	2.2370	6 42 0.4	10.173
18	1 33 38.39	2.2395	6 52 9.8	10.139
19	1 35 52.84	2.2420	7 2 17.1	10.103
20	1 38 7.43	2.2445	7 12 22.2	10.067
21	1 40 22.18	2.2472	7 22 25.1	10.029
22	1 42 37.09	2.2498	7 32 25.7	9.990
23	1 44 52.15	2.2524	7 42 23.9	9.950
24	1 47 7.37	2.2550	N. 7 52 19.7	9.909

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 47 7.37	2.2550	N. 7 52 19.7	9.909
1	1 49 22.75	2.2576	8 2 13.0	9.867
2	1 51 38.28	2.2603	8 12 3.8	9.824
3	1 53 53.98	2.2630	8 21 51.9	9.780
4	1 56 9.84	2.2657	8 31 37.3	9.735
5	1 58 25.86	2.2684	8 41 20.0	9.688
6	2 0 42.04	2.2711	8 50 59.9	9.640
7	2 2 58.39	2.2738	9 0 36.9	9.592
8	2 5 14.90	2.2766	9 10 10.9	9.542
9	2 7 31.58	2.2794	9 19 41.9	9.491
10	2 9 48.43	2.2822	9 29 9.8	9.439
11	2 12 5.44	2.2850	9 38 34.6	9.386
12	2 14 22.63	2.2878	9 47 56.2	9.332
13	2 16 39.98	2.2907	9 57 14.5	9.276
14	2 18 57.51	2.2936	10 6 29.4	9.220
15	2 21 15.20	2.2963	10 15 40.9	9.163
16	2 23 33.07	2.2992	10 24 48.9	9.104
17	2 25 51.10	2.3020	10 33 53.4	9.045
18	2 28 9.31	2.3049	10 42 54.3	8.984
19	2 30 27.70	2.3078	10 51 51.5	8.922
20	2 32 46.25	2.3107	11 0 44.9	8.860
21	2 35 4.98	2.3137	11 9 34.6	8.796
22	2 37 23.89	2.3166	11 18 20.4	8.731
23	2 39 42.97	2.3194	N.11 27 2.3	8.665

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 42 2.22	2.3223	N.11 35 40.2	8.598
1	2 44 21.65	2.3252	11 44 14.0	8.529
2	2 46 41.25	2.3282	11 52 43.7	8.460
3	2 49 1.03	2.3311	12 1 9.2	8.390
4	2 51 20.98	2.3340	12 9 30.5	8.319
5	2 53 41.11	2.3370	12 17 47.5	8.247
6	2 56 1.42	2.3399	12 26 0.1	8.174
7	2 58 21.90	2.3427	12 34 8.3	8.099
8	3 0 42.55	2.3456	12 42 12.0	8.024
9	3 3 3.37	2.3485	12 50 11.2	7.948
10	3 5 24.37	2.3514	12 58 5.8	7.870
11	3 7 45.54	2.3543	13 5 55.7	7.792
12	3 10 6.89	2.3572	13 13 40.8	7.713
13	3 12 28.41	2.3601	13 21 21.2	7.632
14	3 14 50.10	2.3630	13 28 56.7	7.551
15	3 17 11.97	2.3659	13 36 27.3	7.469
16	3 19 34.00	2.3687	13 43 53.0	7.386
17	3 21 56.21	2.3716	13 51 13.7	7.302
18	3 24 18.59	2.3743	13 58 29.3	7.217
19	3 26 41.12	2.3769	14 5 39.7	7.131
20	3 29 3.82	2.3796	14 12 45.0	7.044
21	3 31 26.70	2.3827	14 19 45.1	6.957
22	3 33 49.74	2.3854	14 26 39.8	6.868
23	3 36 12.95	2.3882	14 33 29.2	6.778
24	3 38 36.32	2.3909	N.14 40 13.2	6.688

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 38 36.32	2.3909	N.14 40 13.2	6.688
1	3 40 59.85	2.3935	14 46 51.7	6.596
2	3 43 23.54	2.3962	14 53 24.7	6.504
3	3 45 47.40	2.3988	14 59 52.2	6.411
4	3 48 11.41	2.4014	15 6 14.1	6.317
5	3 50 35.57	2.4040	15 12 30.3	6.222
6	3 52 59.89	2.4067	15 18 40.8	6.127
7	3 55 24.37	2.4093	15 24 45.5	6.031
8	3 57 49.00	2.4118	15 30 44.4	5.933
9	4 0 13.78	2.4142	15 36 37.5	5.835
10	4 2 38.70	2.4166	15 42 24.7	5.737
11	4 5 3.77	2.4191	15 48 5.9	5.637
12	4 7 28.99	2.4215	15 53 41.1	5.537
13	4 9 54.35	2.4238	15 59 10.3	5.436
14	4 12 19.85	2.4262	16 4 33.4	5.334
15	4 14 45.49	2.4284	16 9 50.3	5.231
16	4 17 11.26	2.4306	16 15 1.1	5.128
17	4 19 37.16	2.4328	16 20 5.6	5.024
18	4 22 3.20	2.4351	16 25 3.9	4.919
19	4 24 29.37	2.4372	16 29 55.9	4.814
20	4 26 55.67	2.4393	16 34 41.6	4.708
21	4 29 22.09	2.4413	16 39 20.9	4.601
22	4 31 48.63	2.4433	16 43 53.8	4.494
23	4 34 15.29	2.4453	N.16 48 20.2	4.386

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 36 42.07	2.4472	N.16 52 40.1	4.278
1	4 39 8.96	2.4491	16 56 53.5	4.169
2	4 41 35.96	2.4509	17 1 0.3	4.060
3	4 44 3.07	2.4527	17 5 0.5	3.947
4	4 46 30.29	2.4545	17 8 54.1	3.837
5	4 48 57.61	2.4562	17 12 41.0	3.726
6	4 51 25.03	2.4578	17 16 21.2	3.615
7	4 53 52.54	2.4593	17 19 54.7	3.503
8	4 56 20.15	2.4609	17 23 21.5	3.389
9	4 58 47.85	2.4624	17 26 41.5	3.276
10	5 1 15.64	2.4638	17 29 54.7	3.162
11	5 3 43.51	2.4652	17 33 1.0	3.048
12	5 6 11.46	2.4665	17 36 0.4	2.934
13	5 8 39.49	2.4677	17 38 53.0	2.819
14	5 11 7.59	2.4689	17 41 38.6	2.703
15	5 13 35.76	2.4701	17 44 17.3	2.587
16	5 16 4.00	2.4712	17 46 49.0	2.471
17	5 18 32.31	2.4722	17 49 13.8	2.355
18	5 21 0.67	2.4732	17 51 31.6	2.238
19	5 23 29.09	2.4742	17 53 42.4	2.121
20	5 25 57.57	2.4751	17 55 46.1	2.004
21	5 28 26.10	2.4759	17 57 42.8	1.886
22	5 30 54.67	2.4766	17 59 32.4	1.768
23	5 33 23.28	2.4772	18 1 15.0	1.650
24	5 35 51.93	2.4778	N.18 2 50.5	1.532

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 13.					**FRIDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 35 51.93	2.4778	N.18 2 50.5	1.532	0	7 34 18.80	2.4341	N.17 0 14.8	4.052
1	5 38 20.61	2.4786	18 4 18.9	1.413	1	7 36 44.78	2.4317	16 56 8.5	4.159
2	5 40 49.32	2.4789	18 5 40.1	1.294	2	7 39 10.61	2.4294	16 51 55.7	4.266
3	5 43 18.07	2.4794	18 6 54.2	1.176	3	7 41 36.31	2.4271	16 47 36.6	4.372
4	5 45 46.85	2.4797	18 8 1.2	1.056	4	7 44 1.86	2.4246	16 43 11.1	4.477
5	5 48 15.64	2.4799	18 9 1.0	0.937	5	7 46 27.26	2.4221	16 38 39.3	4.582
6	5 50 44.44	2.4801	18 9 53.7	0.818	6	7 48 52.51	2.4196	16 34 1.3	4.686
7	5 53 13.25	2.4803	18 10 39.2	0.699	7	7 51 17.60	2.4170	16 29 17.1	4.789
8	5 55 42.08	2.4805	18 11 17.6	0.580	8	7 53 42.55	2.4144	16 24 26.7	4.891
9	5 58 10.91	2.4806	18 11 48.8	0.460	9	7 56 7.34	2.4117	16 19 30.1	4.993
10	6 0 39.75	2.4805	18 12 12.8	0.341	10	7 58 31.96	2.4091	16 14 27.5	5.094
11	6 3 8.58	2.4804	18 12 29.6	0.221	11	8 0 56.43	2.4064	16 9 18.9	5.194
12	6 5 37.40	2.4802	18 12 39.2	0.101	12	8 3 20.73	2.4036	16 4 4.2	5.294
13	6 8 6.21	2.4801	18 12 41.7	0.018	13	8 5 44.86	2.4008	15 58 43.6	5.393
14	6 10 35.01	2.4798	18 12 37.0	0.138	14	8 8 8.83	2.3980	15 53 17.1	5.491
15	6 13 3.79	2.4796	18 12 25.2	0.257	15	8 10 32.62	2.3952	15 47 44.7	5.588
16	6 15 32.55	2.4792	18 12 6.2	0.376	16	8 12 56.25	2.3923	15 42 6.5	5.685
17	6 18 1.29	2.4788	18 11 40.0	0.496	17	8 15 19.70	2.3893	15 36 22.5	5.780
18	6 20 30.00	2.4782	18 11 6.7	0.615	18	8 17 42.96	2.3863	15 30 32.8	5.875
19	6 22 58.67	2.4775	18 10 26.3	0.734	19	8 20 6.05	2.3833	15 24 37.5	5.969
20	6 25 27.30	2.4768	18 9 38.7	0.852	20	8 22 28.96	2.3804	15 18 36.6	6.061
21	6 27 55.89	2.4761	18 8 44.0	0.971	21	8 24 51.70	2.3773	15 12 30.1	6.154
22	6 30 24.43	2.4753	18 7 42.2	1.090	22	8 27 14.24	2.3742	15 6 18.1	6.245
23	6 32 52.93.	2.4745	N.18 6 33.3	1.208	23	8 29 36.60	2.3712	N.15 0 0.7	6.335
	THURSDAY 14.					**SATURDAY 16.**			
0	6 35 21.37	2.4736	N.18 5 17.2	1.326	0	8 31 58.78	2.3681	N.14 53 37.9	6.425
1	6 37 49.76	2.4726	18 3 54.1	1.444	1	8 34 20.77	2.3649	14 47 9.7	6.514
2	6 40 18.08	2.4716	18 2 23.9	1.562	2	8 36 42.57	2.3617	14 40 36.2	6.601
3	6 42 46.34	2.4705	18 0 46.7	1.679	3	8 39 4.18	2.3585	14 33 57.5	6.688
4	6 45 14.54	2.4693	17 59 2.4	1.796	4	8 41 25.59	2.3553	14 27 13.7	6.774
5	6 47 42.66	2.4681	17 57 11.1	1.913	5	8 43 46.81	2.3521	14 20 24.7	6.859
6	6 50 10.71	2.4669	17 55 12.8	2.030	6	8 46 7.84	2.3489	14 13 30.6	6.943
7	6 52 38.69	2.4656	17 53 7.5	2.146	7	8 48 28.68	2.3456	14 6 31.5	7.026
8	6 55 6.58	2.4641	17 50 55.3	2.261	8	8 50 49.32	2.3423	13 59 27.5	7.108
9	6 57 34.38	2.4626	17 48 36.2	2.377	9	8 53 9.76	2.3391	13 52 18.6	7.189
10	7 0 2.09	2.4611	17 46 10.1	2.492	10	8 55 30.01	2.3358	13 45 4.8	7.270
11	7 2 29.71	2.4595	17 43 37.2	2.606	11	8 57 50.06	2.3325	13 37 46.2	7.349
12	7 4 57.23	2.4578	17 40 57.4	2.721	12	9 0 9.91	2.3292	13 30 22.9	7.427
13	7 7 24.65	2.4562	17 38 10.8	2.834	13	9 2 29.56	2.3258	13 22 54.9	7.504
14	7 9 51.97	2.4545	17 35 17.3	2.948	14	9 4 49.01	2.3225	13 15 22.3	7.581
15	7 12 19.19	2.4527	17 32 17.1	3.060	15	9 7 8.26	2.3192	13 7 45.2	7.656
16	7 14 46.29	2.4508	17 29 10.1	3.173	16	9 9 27.31	2.3158	13 0 3.6	7.730
17	7 17 13.28	2.4489	17 25 56.4	3.284	17	9 11 46.16	2.3125	12 52 17.6	7.803
18	7 19 40.16	2.4469	17 22 36.0	3.396	18	9 14 4.81	2.3092	12 44 27.2	7.876
19	7 22 6.91	2.4449	17 19 8.9	3.506	19	9 16 23.26	2.3058	12 36 32.5	7.947
20	7 24 33.55	2.4428	17 15 35.2	3.617	20	9 18 41.50	2.3023	12 28 33.6	8.017
21	7 27 0.06	2.4407	17 11 54.9	3.726	21	9 20 59.54	2.2990	12 20 30.5	8.086
22	7 29 26.44	2.4386	17 8 8.1	3.835	22	9 23 17.38	2.2956	12 12 23.2	8.155
23	7 31 52.69	2.4363	17 4 14.7	3.944	23	9 25 35.01	2.2922	12 4 11.9	8.222
24	7 34 18.80	2.4341	N.17 0 14.8	4.052	24	9 27 52.44	2.2888	N.11 55 56.6	8.288

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 27 52.44	2.2888	N.11 55 56.6	8.288
1	9 30 9.67	2.2854	11 47 37.4	8.353
2	9 32 26.69	2.2820	11 39 14.3	8.417
3	9 34 43.51	2.2787	11 30 47.3	8.480
4	9 37 0.13	2.2753	11 22 16.6	8.542
5	9 39 16.55	2.2720	11 13 42.2	8.603
6	9 41 32.77	2.2686	11 5 4.2	8.663
7	9 43 48.78	2.2652	10 56 22.6	8.722
8	9 46 4.59	2.2619	10 47 37.6	8.780
9	9 48 20.21	2.2586	10 38 49.1	8.836
10	9 50 35.62	2.2552	10 29 57.3	8.892
11	9 52 50.83	2.2518	10 21 2.1	8.946
12	9 55 5.84	2.2485	10 12 3.7	9.000
13	9 57 20.65	2.2452	10 3 2.1	9.052
14	9 59 35.27	2.2420	9 53 57.4	9.104
15	10 1 49.69	2.2387	9 44 49.7	9.154
16	10 4 3.91	2.2354	9 35 39.0	9.203
17	10 6 17.94	2.2322	9 26 25.4	9.251
18	10 8 31.77	2.2289	9 17 8.9	9.298
19	10 10 45.41	2.2257	9 7 49.6	9.344
20	10 12 58.85	2.2224	8 58 27.6	9.389
21	10 15 12.10	2.2192	8 49 2.9	9.433
22	10 17 25.16	2.2161	8 39 35.6	9.476
23	10 19 38.03	2.2129	N. 8 30 5.7	9.518

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 21 50.71	2.2098	N. 8 20 33.4	9.558
1	10 24 3.20	2.2067	8 10 58.7	9.598
2	10 26 15.51	2.2036	8 1 21.6	9.637
3	10 28 27.63	2.2004	7 51 42.3	9.674
4	10 30 39.56	2.1974	7 42 0.7	9.711
5	10 32 51.32	2.1944	7 32 17.0	9.746
6	10 35 2.89	2.1913	7 22 31.2	9.780
7	10 37 14.28	2.1883	7 12 43.4	9.813
8	10 39 25.49	2.1853	7 2 53.6	9.846
9	10 41 36.52	2.1823	6 53 1.9	9.877
10	10 43 47.37	2.1794	6 43 8.4	9.907
11	10 45 58.05	2.1766	6 33 13.1	9.936
12	10 48 8.56	2.1737	6 23 16.0	9.964
13	10 50 18.89	2.1708	6 13 17.3	9.991
14	10 52 29.06	2.1680	6 3 17.0	10.017
15	10 54 39.05	2.1652	5 53 15.2	10.042
16	10 56 48.88	2.1625	5 43 12.0	10.066
17	10 58 58.55	2.1597	5 33 7.3	10.089
18	11 1 8.04	2.1569	5 23 1.3	10.111
19	11 3 17.37	2.1542	5 12 54.0	10.131
20	11 5 26.54	2.1515	5 2 45.5	10.151
21	11 7 35.55	2.1488	4 52 35.8	10.170
22	11 9 44.40	2.1462	4 42 25.1	10.187
23	11 11 53.09	2.1436	4 32 13.3	10.204
24	11 14 1.63	2.1410	N. 4 22 0.6	10.220

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 14 1.63	2.1410	N. 4 22 0.6	10.220
1	11 16 10.01	2.1385	4 11 46.9	10.235
2	11 18 18.25	2.1360	4 1 32.4	10.249
3	11 20 26.33	2.1335	3 51 17.1	10.262
4	11 22 34.27	2.1311	3 41 1.0	10.273
5	11 24 42.06	2.1286	3 30 44.3	10.284
6	11 26 49.70	2.1262	3 20 26.9	10.294
7	11 28 57.20	2.1238	3 10 9.0	10.303
8	11 31 4.55	2.1214	2 59 50.6	10.311
9	11 33 11.77	2.1191	2 49 31.7	10.318
10	11 35 18.85	2.1169	2 39 12.4	10.323
11	11 37 25.80	2.1147	2 28 52.8	10.328
12	11 39 32.61	2.1124	2 18 33.0	10.332
13	11 41 39.29	2.1102	2 8 13.0	10.335
14	11 43 45.84	2.1081	1 57 52.8	10.337
15	11 45 52.26	2.1059	1 47 32.5	10.339
16	11 47 58.55	2.1037	1 37 12.2	10.339
17	11 50 4.71	2.1017	1 26 51.9	10.338
18	11 52 10.76	2.0997	1 16 31.6	10.337
19	11 54 16.68	2.0977	1 6 11.5	10.334
20	11 56 22.48	2.0957	0 55 51.5	10.331
21	11 58 28.17	2.0938	0 45 31.8	10.326
22	12 0 33.74	2.0919	0 35 12.4	10.321
23	12 2 39.20	2.0900	N. 0 24 53.3	10.315

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 4 44.54	2.0881	N. 0 14 34.6	10.307
1	12 6 49.77	2.0863	N. 0 4 16.4	10.299
2	12 8 54.90	2.0846	S. 0 6 1.3	10.291
3	12 10 59.92	2.0828	0 16 18.5	10.281
4	12 13 4.84	2.0811	0 26 35.1	10.270
5	12 15 9.65	2.0793	0 36 51.0	10.259
6	12 17 14.36	2.0777	0 47 6.2	10.247
7	12 19 18.98	2.0761	0 57 20.6	10.233
8	12 21 23.49	2.0744	1 7 34.2	10.220
9	12 23 27.91	2.0729	1 17 46.9	10.206
10	12 25 32.24	2.0713	1 27 58.8	10.189
11	12 27 36.47	2.0698	1 38 9.6	10.172
12	12 29 40.62	2.0684	1 48 19.4	10.155
13	12 31 44.68	2.0669	1 58 28.1	10.136
14	12 33 48.65	2.0655	2 8 35.7	10.117
15	12 35 52.54	2.0642	2 18 42.2	10.097
16	12 37 56.35	2.0628	2 28 47.4	10.077
17	12 40 0.07	2.0614	2 38 51.4	10.055
18	12 42 3.72	2.0602	2 48 54.1	10.033
19	12 44 7.30	2.0590	2 58 55.4	10.010
20	12 46 10.80	2.0577	3 8 55.3	9.986
21	12 48 14.22	2.0564	3 18 53.7	9.961
22	12 50 17.57	2.0552	3 28 50.7	9.936
23	12 52 20.85	2.0542	3 38 46.1	9.910
24	12 54 24.07	2.0531	S. 3 48 39.9	9.883

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 54 24.07	2.0531	S. 3 48 39.9	9.883
1	12 56 27.22	2.0520	3 58 32.0	9.855
2	12 58 30.31	2.0509	4 8 22.5	9.827
3	13 0 33.33	2.0499	4 18 11.2	9.798
4	13 2 36.30	2.0489	4 27 58.2	9.768
5	13 4 39.20	2.0479	4 37 43.4	9.737
6	13 6 42.05	2.0470	4 47 26.7	9.706
7	13 8 44.85	2.0461	4 57 8.1	9.674
8	13 10 47.58	2.0452	5 6 47.6	9.641
9	13 12 50.27	2.0444	5 16 25.1	9.607
10	13 14 52.91	2.0436	5 26 0.5	9.573
11	13 16 55.50	2.0428	5 35 33.8	9.538
12	13 18 58.04	2.0420	5 45 5.0	9.502
13	13 21 0.54	2.0412	5 54 34.1	9.466
14	13 23 2.99	2.0405	6 4 1.0	9.429
15	13 25 5.40	2.0398	6 13 25.6	9.393
16	13 27 7.77	2.0392	6 22 48.0	9.353
17	13 29 10.11	2.0386	6 32 8.0	9.315
18	13 31 12.40	2.0380	6 41 25.7	9.275
19	13 33 14.66	2.0374	6 50 41.0	9.235
20	13 35 16.89	2.0368	6 59 53.9	9.194
21	13 37 19.08	2.0363	7 9 4.3	9.152
22	13 39 21.25	2.0358	7 18 12.2	9.110
23	13 41 23.38	2.0353	S. 7 27 17.5	9.067

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 43 25.49	2.0349	S. 7 36 20.2	9.024
1	13 45 27.57	2.0345	7 45 20.3	8.980
2	13 47 29.63	2.0341	7 54 17.7	8.935
3	13 49 31.66	2.0337	8 3 12.5	8.889
4	13 51 33.67	2.0333	8 12 4.5	8.843
5	13 53 35.66	2.0330	8 20 53.7	8.797
6	13 55 37.63	2.0327	8 29 40.1	8.750
7	13 57 39.58	2.0324	8 38 23.7	8.702
8	13 59 41.52	2.0322	8 47 4.4	8.654
9	14 1 43.44	2.0319	8 55 42.2	8.606
10	14 3 45.35	2.0317	9 4 17.0	8.556
11	14 5 47.27	2.0315	9 12 48.9	8.506
12	14 7 49.13	2.0313	9 21 17.7	8.455
13	14 9 51.00	2.0312	9 29 43.5	8.404
14	14 11 52.87	2.0311	9 38 6.2	8.353
15	14 13 54.73	2.0309	9 46 25.8	8.301
16	14 15 56.58	2.0309	9 54 42.3	8.248
17	14 17 58.43	2.0308	10 2 55.6	8.195
18	14 20 0.28	2.0308	10 11 5.7	8.141
19	14 22 2.12	2.0307	10 19 12.5	8.087
20	14 24 3.97	2.0307	10 27 16.1	8.032
21	14 26 5.81	2.0307	10 35 16.4	7.977
22	14 28 7.65	2.0307	10 43 13.3	7.921
23	14 30 9.50	2.0308	10 51 6.9	7.865
24	14 32 11.35	2.0309	S. 10 58 57.1	7.808

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 32 11.35	2.0309	S. 10 58 57.1	7.808
1	14 34 13.21	2.0310	11 6 43.8	7.750
2	14 36 15.07	2.0311	11 14 27.1	7.692
3	14 38 16.93	2.0312	11 22 6.9	7.634
4	14 40 18.81	2.0313	11 29 43.2	7.576
5	14 42 20.69	2.0314	11 37 16.0	7.516
6	14 44 22.58	2.0316	11 44 45.2	7.457
7	14 46 24.49	2.0318	11 52 10.8	7.397
8	14 48 26.40	2.0320	11 59 32.8	7.336
9	14 50 28.33	2.0322	12 6 51.2	7.275
10	14 52 30.27	2.0325	12 14 5.9	7.214
11	14 54 32.23	2.0327	12 21 16.9	7.152
12	14 56 34.20	2.0330	12 28 24.2	7.090
13	14 58 36.19	2.0332	12 35 27.7	7.027
14	15 0 38.19	2.0335	12 42 27.4	6.964
15	15 2 40.21	2.0338	12 49 23.4	6.900
16	15 4 42.25	2.0342	12 56 15.5	6.836
17	15 6 44.31	2.0345	13 3 3.7	6.772
18	15 8 46.39	2.0348	13 9 48.1	6.707
19	15 10 48.49	2.0352	13 16 28.6	6.642
20	15 12 50.61	2.0356	13 23 5.2	6.576
21	15 14 52.76	2.0360	13 29 37.8	6.510
22	15 16 54.93	2.0363	13 36 6.4	6.444
23	15 18 57.12	2.0367	S. 13 42 31.1	6.377

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 20 59.33	2.0371	S. 13 48 51.7	6.310
1	15 23 1.57	2.0375	13 55 8.3	6.243
2	15 25 3.83	2.0379	14 1 20.8	6.175
3	15 27 6.12	2.0384	14 7 29.2	6.106
4	15 29 8.44	2.0388	14 13 33.5	6.038
5	15 31 10.78	2.0392	14 19 33.7	5.969
6	15 33 13.15	2.0397	14 25 29.7	5.899
7	15 35 15.55	2.0402	14 31 21.6	5.830
8	15 37 17.98	2.0407	14 37 9.3	5.760
9	15 39 20.44	2.0412	14 42 52.8	5.689
10	15 41 22.93	2.0417	14 48 32.1	5.619
11	15 43 25.44	2.0422	14 54 7.1	5.548
12	15 45 27.99	2.0427	14 59 37.8	5.477
13	15 47 30.57	2.0432	15 5 4.3	5.405
14	15 49 33.18	2.0437	15 10 26.4	5.333
15	15 51 35.82	2.0442	15 15 44.2	5.260
16	15 53 38.49	2.0447	15 20 57.6	5.188
17	15 55 41.19	2.0452	15 26 6.7	5.115
18	15 57 43.92	2.0458	15 31 11.4	5.042
19	15 59 46.69	2.0464	15 36 11.7	4.968
20	16 1 49.49	2.0470	15 41 7.6	4.894
21	16 3 52.33	2.0475	15 45 59.0	4.820
22	16 5 55.19	2.0480	15 50 46.0	4.746
23	16 7 58.09	2.0487	15 55 28.5	4.672
24	16 10 1.03	2.0493	S. 16 0 6.6	4.597

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 10 1.03	2.0493	S.16 0 6.6	4.597
1	16 12 4.00	2.0498	16 4 40.1	4.521
2	16 14 7.00	2.0503	16 9 9.1	4.446
3	16 16 10.04	2.0509	16 13 33.6	4.370
4	16 18 13.11	2.0514	16 17 53.5	4.294
5	16 20 16.21	2.0520	16 22 8.8	4.218
6	16 22 19.35	2.0527	16 26 19.6	4.141
7	16 24 22.53	2.0533	16 30 25.8	4.065
8	16 26 25.74	2.0538	16 34 27.4	3.988
9	16 28 28.98	2.0543	16 38 24.4	3.911
10	16 30 32.25	2.0548	16 42 16.7	3.833
11	16 32 35.56	2.0555	16 46 4.4	3.756
12	16 34 38.91	2.0561	16 49 47.4	3.677
13	16 36 42.29	2.0566	16 53 25.7	3.599
14	16 38 45.70	2.0572	16 56 59.3	3.521
15	16 40 49.15	2.0578	17 0 28.2	3.443
16	16 42 52.63	2.0583	17 3 52.4	3.364
17	16 44 56.15	2.0589	17 7 11.9	3.285
18	16 46 59.70	2.0594	17 10 26.6	3.206
19	16 49 3.28	2.0600	17 13 36.6	3.127
20	16 51 6.90	2.0606	17 16 41.8	3.047
21	16 53 10.55	2.0612	17 19 42.3	2.968
22	16 55 14.24	2.0618	17 22 38.0	2.888
23	16 57 17.96	2.0623	S.17 25 28.9	2.808

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 59 21.71	2.0628	S.17 28 14.9	2.727
1	17 1 25.50	2.0633	17 30 56.1	2.647
2	17 3 29.31	2.0639	17 33 32.5	2.566
3	17 5 33.17	2.0645	17 36 4.1	2.486
4	17 7 37.05	2.0650	17 38 30.8	2.405
5	17 9 40.97	2.0655	17 40 52.7	2.324
6	17 11 44.91	2.0660	17 43 9.7	2.242
7	17 13 48.89	2.0666	17 45 21.8	2.161
8	17 15 52.91	2.0671	17 47 29.0	2.080
9	17 17 56.95	2.0676	17 49 31.4	1.998
10	17 20 1.02	2.0681	17 51 28.8	1.916
11	17 22 5.12	2.0687	17 53 21.3	1.834
12	17 24 9.26	2.0692	17 55 8.9	1.752
13	17 26 13.42	2.0697	17 56 51.5	1.669
14	17 28 17.62	2.0702	17 58 29.2	1.586
15	17 30 21.84	2.0706	18 0 2.0	1.506
16	17 32 26.09	2.0711	18 1 29.8	1.422
17	17 34 30.37	2.0716	18 2 52.7	1.339
18	17 36 34.68	2.0720	18 4 10.6	1.257
19	17 38 39.01	2.0724	18 5 23.5	1.174
20	17 40 43.37	2.0729	18 6 31.4	1.091
21	17 42 47.76	2.0734	18 7 34.4	1.007
22	17 44 52.18	2.0738	18 8 32.4	0.925
23	17 46 56.62	2.0742	18 9 25.4	0.842
24	17 49 1.08	2.0746	S.18 10 13.4	0.758

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 49 1.08	2.0746	S.18 10 13.4	0.758
1	17 51 5.57	2.0751	18 10 56.4	0.675
2	17 53 10.09	2.0755	18 11 34.4	0.591
3	17 55 14.62	2.0758	18 12 7.4	0.507
4	17 57 19.18	2.0762	18 12 35.3	0.424
5	17 59 23.77	2.0766	18 12 58.2	0.340
6	18 1 28.38	2.0770	18 13 16.1	0.256
7	18 3 33.01	2.0773	18 13 29.0	0.172
8	18 5 37.66	2.0777	18 13 36.8	0.089
9	18 7 42.33	2.0780	18 13 39.6	0.005
10	18 9 47.02	2.0784	18 13 37.3	0.079
11	18 11 51.74	2.0788	18 13 30.0	0.163
12	18 13 56.48	2.0792	18 13 17.7	0.247
13	18 16 1.24	2.0795	18 13 0.3	0.332
14	18 18 6.02	2.0797	18 12 37.9	0.416
15	18 20 10.81	2.0800	18 12 10.4	0.500
16	18 22 15.62	2.0803	18 11 37.9	0.584
17	18 24 20.45	2.0807	18 11 0.3	0.668
18	18 26 25.30	2.0810	18 10 17.7	0.752
19	18 28 30.17	2.0813	18 9 30.0	0.837
20	18 30 35.05	2.0815	18 8 37.3	0.921
21	18 32 39.95	2.0818	18 7 39.5	1.005
22	18 34 44.87	2.0821	18 6 36.7	1.089
23	18 36 49.80	2.0823	S.18 5 28.8	1.173

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 38 54.75	2.0826	S.18 4 15.9	1.257
1	18 40 59.71	2.0828	18 2 57.9	1.342
2	18 43 4.69	2.0831	18 1 34.9	1.426
3	18 45 9.68	2.0833	18 0 6.8	1.510
4	18 47 14.68	2.0835	17 58 33.7	1.594
5	18 49 19.70	2.0837	17 56 55.5	1.678
6	18 51 24.73	2.0840	17 55 12.3	1.762
7	18 53 29.78	2.0842	17 53 24.1	1.846
8	18 55 34.83	2.0843	17 51 30.8	1.930
9	18 57 39.90	2.0845	17 49 32.5	2.014
10	18 59 44.98	2.0847	17 47 29.2	2.097
11	19 1 50.07	2.0849	17 45 20.9	2.181
12	19 3 55.17	2.0851	17 43 7.5	2.265
13	19 6 0.28	2.0853	17 40 49.1	2.348
14	19 8 5.40	2.0854	17 38 25.7	2.432
15	19 10 10.53	2.0856	17 35 57.3	2.515
16	19 12 15.67	2.0857	17 33 23.9	2.599
17	19 14 20.82	2.0859	17 30 45.5	2.682
18	19 16 25.98	2.0861	17 28 2.1	2.765
19	19 18 31.15	2.0862	17 25 13.7	2.848
20	19 20 36.32	2.0863	17 22 20.3	2.931
21	19 22 41.51	2.0865	17 19 21.9	3.014
22	19 24 46.70	2.0866	17 16 18.5	3.097
23	19 26 51.90	2.0867	17 13 10.2	3.180
24	19 28 57.11	2.0868	S.17 9 56.9	3.263

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 28 57.11	2.0868	S. 17 9 56.9	3.263
1	19 31 2.32	2.0870	17 6 38.7	3.345
2	19 33 7.55	2.0872	17 3 15.5	3.427
3	19 35 12.78	2.0872	16 59 47.4	3.510
4	19 37 18.01	2.0873	16 56 14.4	3.592
5	19 39 23.26	2.0875	16 52 36.4	3.674
6	19 41 28.51	2.0876	16 48 53.5	3.755
7	19 43 33.77	2.0877	16 45 5.7	3.837
8	19 45 39.03	2.0878	16 41 13.1	3.918
9	19 47 44.30	2.0879	16 37 15.6	4.000
10	19 49 49.58	2.0880	16 33 13.2	4.081
11	19 51 54.86	2.0881	16 29 5.9	4.162
12	19 54 0.15	2.0882	16 24 53.7	4.243
13	19 56 5.44	2.0883	16 20 36.7	4.323
14	19 58 10.74	2.0884	16 16 14.9	4.404
15	20 0 16.05	2.0886	16 11 48.3	4.484
16	20 2 21.37	2.0887	16 7 16.9	4.564
17	20 4 26.69	2.0888	16 2 40.7	4.644
18	20 6 32.02	2.0888	15 57 59.7	4.723
19	20 8 37.35	2.0889	15 53 13.9	4.802
20	20 10 42.69	2.0891	15 48 23.4	4.882
21	20 12 48.04	2.0892	15 43 28.1	4.961
22	20 14 53.39	2.0893	15 38 28.1	5.040
23	20 16 58.75	2.0894	S. 15 33 23.3	5.118

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 19 4.12	2.0896	S. 15 28 13.8	5.197
1	20 21 9.49	2.0897	15 22 59.7	5.276
2	20 23 14.88	2.0898	15 17 40.9	5.352
3	20 25 20.27	2.0899	15 12 17.4	5.430
4	20 27 25.67	2.0900	15 6 49.3	5.507
5	20 29 31.07	2.0902	15 1 16.6	5.584
6	20 31 36.49	2.0903	14 55 39.2	5.661
7	20 33 41.91	2.0905	14 49 57.2	5.737
8	20 35 47.35	2.0907	14 44 10.7	5.813
9	20 37 52.79	2.0908	14 38 19.6	5.889
10	20 39 58.24	2.0910	14 32 24.0	5.965
11	20 42 3.71	2.0912	14 26 23.8	6.040
12	20 44 9.18	2.0913	14 20 19.1	6.115
13	20 46 14.67	2.0915	14 14 9.9	6.190
14	20 48 20.16	2.0917	14 7 56.2	6.265
15	20 50 25.67	2.0920	14 1 38.1	6.339
16	20 52 31.20	2.0922	13 55 15.6	6.412
17	20 54 36.74	2.0924	13 48 48.6	6.486
18	20 56 42.29	2.0926	13 42 17.3	6.559
19	20 58 47.85	2.0928	13 35 41.6	6.631
20	21 0 53.42	2.0931	13 29 1.6	6.704
21	21 2 59.02	2.0934	13 22 17.2	6.776
22	21 5 4.63	2.0937	13 15 28.5	6.847
23	21 7 10.26	2.0939	13 8 35.5	6.919
24	21 9 15.90	2.0942	S. 13 1 38.3	6.990

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 9 15.90	2.0942	S. 13 1 38.3	6.990
1	21 11 21.56	2.0945	12 54 36.8	7.060
2	21 13 27.24	2.0948	12 47 31.1	7.130
3	21 15 32.94	2.0952	12 40 21.2	7.200
4	21 17 38.66	2.0956	12 33 7.1	7.269
5	21 19 44.41	2.0960	12 25 48.9	7.338
6	21 21 50.18	2.0962	12 18 26.5	7.407
7	21 23 55.96	2.0965	12 11 0.0	7.475
8	21 26 1.76	2.0969	12 3 29.5	7.542
9	21 28 7.59	2.0974	11 55 55.0	7.609
10	21 30 13.45	2.0979	11 48 16.4	7.676
11	21 32 19.34	2.0983	11 40 33.8	7.743
12	21 34 25.25	2.0987	11 32 47.3	7.809
13	21 36 31.19	2.0992	11 24 56.8	7.874
14	21 38 37.16	2.0997	11 17 2.4	7.939
15	21 40 43.15	2.1002	11 9 4.1	8.003
16	21 42 49.18	2.1007	11 1 2.0	8.067
17	21 44 55.24	2.1013	10 52 56.1	8.131
18	21 47 1.34	2.1018	10 44 46.4	8.194
19	21 49 7.46	2.1024	10 36 32.9	8.256
20	21 51 13.62	2.1030	10 28 15.7	8.318
21	21 53 19.82	2.1036	10 19 54.8	8.379
22	21 55 26.06	2.1042	10 11 30.2	8.440
23	21 57 32.33	2.1048	S. 10 3 2.0	8.501

MONDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 59 38.64	2.1055	S. 9 54 30.1	8.561

PHASES OF THE MOON.

		d	h	m
●	New Moon, . .	5	21	38.1
☽	First Quarter, . .	12	20	47.3
○	Full-Moon, . . .	19	20	55.3
☾	Last Quarter, . .	27	19	45.9

		d	h
☾	Perigee, ...	12	10.9
☾	Apogee, ...	26	16.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica	W.	81° 39′ 50″	3009	83° 9′ 51″	3001	84° 40′ 3″	2992	86° 10′ 26″	2983
	Saturn	W.	49 17 38	3003	50 47 47	2994	52 18 7	2985	53 48 39	2976
	Antares	W.	36 44 30	3166	38 11 20	3147	39 38 33	3129	41 6 8	3110
	Sun	E.	57 10 12	3372	55 47 24	3364	54 24 26	3354	53 1 17	3344
2	Spica	W.	93 45 17	2934	95 16 53	2923	96 48 43	2912	98 20 47	2901
	Saturn	W.	61 24 19	2925	62 56 6	2914	64 28 8	2903	66 0 23	2891
	Antares	W.	48 29 19	3028	49 58 57	3013	51 28 54	2997	52 59 10	2982
	Sun	E.	46 2 32	3289	44 38 8	3278	43 13 31	3266	41 48 40	3253
3	Spica	W.	106 4 44	2843	107 38 16	2831	109 12 4	2819	110 46 7	2807
	Saturn	W.	73 45 24	2831	75 19 10	2819	76 53 13	2807	88 27 32	2796
	Antares	W.	60 35 13	2908	62 7 21	2894	63 39 48	2880	65 12 34	2865
	Sun	E.	34 40 43	3190	33 14 22	3177	31 47 45	3163	30 20 52	3150
8	Sun	W.	26 23 31	2717	27 59 48	2710	29 36 14	2704	31 12 49	2696
	Mars	E.	89 16 17	2497	87 35 0	2491	85 53 35	2485	84 12 0	2479
	Pollux	E.	97 44 1	2479	96 2 18	2472	94 20 25	2465	92 38 22	2458
9	Sun	W.	39 17 56	2667	40 55 21	2662	42 32 52	2657	44 10 29	2652
	Mars	E.	75 42 17	2456	74 0 2	2453	72 17 42	2449	70 35 17	2446
	Pollux	E.	84 6 4	2433	82 23 16	2429	80 40 22	2426	78 57 24	2422
	Regulus	E.	120 17 8	2352	118 32 24	2348	116 47 34	2343	115 2 37	2339
10	Sun	W.	52 20 0	2634	53 58 9	2631	55 36 22	2628	57 14 38	2625
	Mars	E.	62 2 22	2437	60 19 40	2437	58 36 57	2436	56 54 15	2437
	Pollux	E.	70 21 38	2414	68 38 23	2413	66 55 7	2413	65 11 51	2414
	Regulus	E.	106 16 27	2321	104 30 58	2319	102 45 25	2316	100 59 49	2313
11	Sun	W.	65 26 50	2615	67 5 24	2614	68 43 59	2613	70 22 36	2612
	a Arietis	W.	24 45 27	3056	26 14 31	2965	27 45 27	2889	29 17 59	2828
	Mars	E.	48 21 2	2445	46 38 32	2449	44 56 8	2453	43 13 49	2459
	Pollux	E.	56 36 1	2426	54 53 4	2430	53 10 12	2435	51 27 27	2441
	Regulus	E.	92 10 58	2304	90 25 5	2302	88 39 9	2301	86 53 12	2300
12	Sun	W.	78 36 0	2609	80 14 43	2609	81 53 26	2609	83 32 9	2609
	a Arietis	W.	37 17 27	2629	38 55 43	2604	40 34 34	2582	42 13 54	2563
	Mars	E.	34 44 34	2502	33 3 23	2516	31 22 32	2532	29 42 2	2551
	Pollux	E.	42 56 19	2488	41 14 49	2502	39 33 39	2519	37 52 52	2537
	Regulus	E.	78 3 9	2298	76 17 7	2298	74 31 5	2298	72 45 3	2298
13	Sun	W.	91 45 41	2611	93 24 21	2612	95 3 0	2613	96 41 37	2614
	a Arietis	W.	50 36 8	2498	52 17 24	2489	53 58 52	2482	55 40 31	2475
	Aldebaran	W.	16 14 14	2296	18 0 19	2297	19 46 23	2298	21 32 25	2299
	Regulus	E.	63 55 0	2302	62 9 3	2303	60 23 7	2304	58 37 13	2306
	Spica	E.	117 23 38	2313	115 37 57	2313	113 52 16	2313	112 6 36	2314
14	Sun	W.	104 54 18	2621	106 32 44	2624	108 11 7	2626	109 49 27	2628
	a Arietis	W.	64 10 40	2454	65 52 58	2452	67 35 19	2450	69 17 42	2449
	Aldebaran	W.	30 22 14	2305	32 8 5	2307	33 53 54	2309	35 39 40	2311
	Regulus	E.	49 48 16	2314	48 2 37	2316	46 17 1	2319	44 31 29	2322
	Spica	E.	103 18 35	2320	101 33 4	2322	99 47 36	2323	98 2 10	2325
15	Sun	W.	118 0 18	2641	119 38 17	2644	121 16 12	2648	122 54 2	2652
	a Arietis	W.	77 49 49	2450	79 32 12	2452	81 14 33	2454	82 56 51	2456

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Spica	W.	87° 41′ 0″	2973	89° 11′ 46″	2964	90° 42′ 44″	2954	92° 13′ 54″	2944
	Saturn	W.	55 19 22	2966	56 50 17	2956	58 21 25	2946	59 52 45	2935
	Antares	W.	42 34 5	3093	44 2 23	3076	45 31 2	3060	47 0 0	3044
	Sun	E.	51 37 56	3333	50 14 23	3323	48 50 39	3313	47 26 42	3301
2	Spica	W.	99 53 5	2890	101 25 38	2878	102 58 25	2866	104 31 27	2855
	Saturn	W.	67 32 53	2880	69 5 38	2868	70 38 38	2856	72 11 53	2844
	Antares	W.	54 29 45	2967	56 0 39	2952	57 31 52	2938	59 3 23	2923
	Sun	E.	40 23 34	3242	38 58 14	3229	37 32 39	3216	36 6 49	3203
3	Spica	W.	112 20 26	2795	113 55 1	2782	115 29 52	2770	117 4 59	2758
	Saturn	W.	80 2 7	2782	81 36 59	2769	83 12 8	2756	84 47 33	2744
	Antares	W.	66 45 38	2851	68 19 0	2837	69 52 41	2822	71 26 40	2808
	Sun	E.	28 53 43	3137	27 26 18	3123	25 58 36	3110	24 30 38	3096
8	Sun	W.	32 49 34	2689	34 26 28	2684	36 3 29	2678	37 40 39	2672
	Mars	E.	82 30 18	2474	80 48 28	2469	79 6 31	2464	77 24 27	2460
	Pollux	E.	90 56 10	2453	89 13 50	2447	87 31 22	2442	85 48 46	2437
9	Sun	W.	45 48 13	2648	47 26 2	2645	49 3 57	2641	50 41 56	2638
	Mars	E.	68 52 48	2443	67 10 15	2441	65 27 40	2440	63 45 2	2438
	Pollux	E.	77 14 21	2419	75 31 14	2417	73 48 4	2416	72 4 52	2415
	Regulus	E.	113 17 34	2335	111 32 25	2331	109 47 11	2328	108 1 52	2324
10	Sun	W.	58 52 59	2623	60 31 23	2621	62 9 49	2619	63 48 18	2617
	Mars	E.	55 11 33	2438	53 28 52	2439	51 46 12	2441	50 3 36	2443
	Pollux	E.	63 28 36	2415	61 45 23	2417	60 2 12	2419	58 19 5	2422
	Regulus	E.	99 14 8	2311	97 28 25	2309	95 42 39	2307	93 56 50	2306
11	Sun	W.	72 1 15	2611	73 39 55	2610	75 18 36	2610	76 57 17	2609
	a Arietis	W.	30 51 52	2773	32 26 55	2729	34 2 57	2690	35 39 51	2656
	Mars	E.	41 31 38	2465	39 49 35	2472	38 7 43	2480	36 26 2	2490
	Pollux	E.	49 44 50	2448	48 2 24	2456	46 20 8	2466	44 38 6	2476
	Regulus	E.	85 7 13	2300	83 21 13	2299	81 35 13	2299	79 49 11	2298
12	Sun	W.	85 10 52	2609	86 49 35	2610	88 28 17	2610	90 6 59	2610
	a Arietis	W.	43 53 40	2646	45 33 49	2632	47 14 18	2619	48 55 5	2607
	Mars	E.	28 1 59	2574	26 22 27	2602	24 43 35	2636	23 5 29	2675
	Pollux	E.	36 12 30	2560	34 32 40	2585	32 53 24	2615	31 14 49	2649
	Regulus	E.	70 59 1	2299	69 12 59	2299	67 26 59	2300	65 40 59	2301
13	Sun	W.	98 20 13	2615	99 58 48	2617	101 37 20	2618	103 15 50	2620
	a Arietis	W.	57 22 19	2470	59 4 15	2465	60 46 18	2460	62 28 26	2456
	Aldebaran	W.	23 18 26	2300	25 4 26	2301	26 50 24	2302	28 36 20	2304
	Regulus	E.	56 51 21	2307	55 5 31	2308	53 19 43	2310	51 33 58	2312
	Spica	E.	110 20 57	2315	108 35 19	2316	106 49 43	2317	105 4 8	2318
14	Sun	W.	111 27 44	2630	113 5 58	2633	114 44 8	2635	116 22 15	2638
	a Arietis	W.	71 0 7	2448	72 42 33	2448	74 24 59	2448	76 7 25	2449
	Aldebaran	W.	37 25 24	2313	39 11 3	2316	40 56 39	2319	42 42 12	2322
	Regulus	E.	42 46 0	2324	41 0 36	2328	39 15 17	2331	37 30 3	2335
	Spica	E.	96 16 47	2327	94 31 28	2330	92 46 12	2332	91 0 59	2335
15	Sun	W.	124 31 47	2655	126 9 27	2659	127 47 2	2663	129 24 31	2668
	a Arietis	W.	84 39 6	2459	86 21 16	2462	88 3 23	2466	89 45 24	2470

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Aldebaran	W.	44° 27′ 40″	2324	46° 13′ 5″	2327	47° 58′ 25″	2330	49° 43′ 41″	2333
	Regulus	E.	35 44 54	2339	33 59 51	2343	32 14 54	2348	30 30 5	2353
	Spica	E.	89 15 50	2337	87 30 45	2341	85 45 45	2344	84 0 49	2347
16	Sun	W.	131 1 55	2672	132 39 12	2677	134 16 23	2682	135 53 27	2687
	α Arietis	W.	91 27 19	2475	93 9 9	2480	94 50 51	2485	96 32 26	2490
	Aldebaran	W.	58 28 42	2353	60 13 25	2357	61 58 1	2362	63 42 31	2366
	Mars	W.	22 49 56	2706	24 26 28	2679	26 3 36	2657	27 41 13	2640
	Spica	E.	75 17 30	2368	73 33 9	2372	71 48 54	2377	70 4 46	2382
	Saturn	E.	107 29 5	2349	105 44 17	2354	103 59 36	2359	102 15 2	2363
17	α Arietis	W.	104 58 9	2525	106 38 46	2534	108 19 12	2543	109 59 25	2553
	Aldebaran	W.	72 23 9	2394	74 6 52	2401	75 50 26	2407	77 33 51	2413
	Mars	W.	35 53 50	2597	37 32 49	2595	39 11 51	2594	40 50 54	2594
	Pollux	W.	30 35 43	2727	32 11 47	2704	33 48 22	2684	35 25 24	2669
	Spica	E.	61 26 7	2412	59 42 50	2419	57 59 43	2426	56 16 46	2433
	Saturn	E.	93 33 59	2390	91 50 10	2396	90 6 30	2403	88 22 59	2409
	Antares	E.	107 5 29	2461	105 23 21	2466	103 41 20	2472	101 59 27	2477
18	Aldebaran	W.	86 8 28	2450	87 50 51	2458	89 33 3	2467	91 15 3	2475
	Mars	W.	49 5 38	2610	50 44 18	2615	52 22 53	2621	54 1 20	2626
	Pollux	W.	43 34 32	2629	45 12 48	2626	46 51 7	2626	48 29 26	2626
	Spica	E.	47 44 47	2476	46 3 0	2486	44 21 27	2496	42 40 8	2506
	Saturn	E.	79 47 52	2446	78 5 23	2454	76 23 5	2462	74 40 58	2471
	Antares	E.	93 32 16	2512	91 51 20	2520	90 10 35	2529	88 30 1	2538
19	Aldebaran	W.	99 41 57	2522	101 22 40	2531	103 3 10	2541	104 43 26	2551
	Mars	W.	62 11 15	2665	63 48 42	2674	65 25 57	2683	67 3 0	2692
	Pollux	W.	56 40 31	2643	58 18 28	2648	59 56.18	2655	61 33 59	2661
	Regulus	W.	19 45 48	2561	21 25 37	2566	23 5 19	2572	24 44 53	2578
	Spica	E.	34 17 25	2566	32 37 44	2581	30 58 23	2596	29 19 23	2612
	Saturn	E.	66 13 33	2517	64 32 43	2527	62 52 7	2537	61 11 45	2547
	Antares	E.	80 10 21	2585	78 31 6	2596	76 52 5	2607	75 13 19	2618
20	Mars	W.	75 4 54	2744	76 40 35	2756	78 16 1	2767	79 51 12	2779
	Pollux	W.	69 39 57	2702	71 16 35	2711	72 53 0	2721	74 29 12	2731
	Regulus	W.	33 0 8	2621	34 38 34	2632	36 16 46	2642	37 54 45	2652
	Saturn	E.	52 53 34	2601	51 14 41	2613	49 36 3	2624	47 57 42	2636
	Antares	E.	67 3 28	2680	65 26 21	2692	63 49 31	2706	62 12 59	2720
21	Mars	W.	87 43 17	2838	89 16 54	2852	90 50 16	2864	92 23 21	2876
	Pollux	W.	82 26 46	2786	84 1 33	2797	85 36 6	2808	87 10 23	2820
	Regulus	W.	46 0 59	2707	47 37 28	2719	49 13 43	2731	50 49 41	2742
	Saturn	E.	39 49 54	2697	38 13 10	2710	36 36 42	2722	35 0 32	2735
	Antares	E.	54 15 5	2798	52 40 30	2811	51 6 16	2828	49 32 24	2845
	α Aquilæ	E.	102 53 2	3148	101 25 51	3155	99 58 48	3163	98 31 55	3172
22	Pollux	W.	94 57 56	2881	96 30 39	2894	98 3 7	2905	99 35 18	2916
	Regulus	W.	58 45 46	2801	60 20 11	2813	61 54 23	2825	63 28 19	2836
	Antares	E.	41 48 52	2940	40 17 24	2962	38 46 24	2985	37 15 52	3009
	α Aquilæ	E.	91 20 12	3223	89 54 30	3235	88 29 1	3247	87 3 47	3259
	Venus	E.	110 6 19	3206	108 40 17	3219	107 14 30	3232	105 48 59	3245
	Jupiter	E.	118 33 40	2878	117 0 53	2890	115 28 21	2901	113 56 4	2913
23	Pollux	W.	107 12 19	2981	108 42 55	2993	110 13 16	3006	111 43 22	3018

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Aldebaran	W.	51° 28′ 51″	2337	53° 13′ 57″	2340	54° 58′ 57″	2344	56° 43′ 52″	2348
	Regulus	E.	28 45 23	2359	27 0 50	2366	25 16 27	2373	23 32 14	2382
	Spica	E.	82 15 58	2360	80 31 12	2355	78 46 32	2359	77 1 58	2363
16	SUN	W.	137 30 24	2692	139 7 14	2698	140 43 56	2704	142 20 30	2710
	α Arietis	W.	98 13 53	2497	99 55 12	2503	101 36 21	2510	103 17 20	2517
	Aldebaran	W.	65 26 54	2372	67 11 9	2377	68 55 17	2382	70 39 17	2388
	Mars	W.	29 19 14	2626	30 57 34	2615	32 36 9	2606	34 14 55	2600
	Spica	E.	68 20 46	2388	66 36 54	2394	64 53 10	2399	63 9 34	2405
	Saturn	E.	100 30 34	2368	98 46 14	2373	97 2 1	2379	95 17 56	2384
17	α Arietis	W.	111 39 24	2664	113 19 10	2674	114 58 40	2686	116 37 54	2698
	Aldebaran	W.	79 17 7	2420	81 0 13	2428	82 43 8	2435	84 25 53	2443
	Mars	W.	42 29 57	2596	44 8 58	2599	45 47 55	2601	47 26 48	2605
	Pollux	W.	37 2 46	2656	38 40 25	2646	40 18 18	2638	41 56 21	2632
	Spica	E.	54 33 59	2441	52 51 23	2450	51 8 59	2458	49 26 47	2467
	Saturn	E.	86 39 37	2416	84 56 25	2423	83 13 24	2431	81 30 33	2438
	Antares	E.	100 17 42	2484	98 36 6	2490	96 54 40	2497	95 13 23	2504
18	Aldebaran	W.	92 56 51	2484	94 38 27	2493	96 19 50	2502	98 1 0	2512
	Mars	W.	55 39 38	2633	57 17 47	2640	58 55 47	2649	60 33 36	2657
	Pollux	W.	50 7 46	2628	51 46 3	2630	53 24 17	2633	55 2 27	2638
	Spica	E.	40 59 3	2517	39 18 13	2529	37 37 40	2541	35 57 23	2554
	Saturn	E.	72 59 4	2480	71 17 22	2489	69 35 53	2497	67 54 36	2507
	Antares	E.	86 49 40	2546	85 9 31	2555	83 29 34	2565	81 49 51	2574
19	Aldebaran	W.	106 23 28	2562	108 3 15	2572	109 42 48	2583	111 22 6	2594
	Mars	W.	68 39 50	2702	70 16 27	2713	71 52 50	2723	73 28 59	2734
	Pollux	W.	63 11 32	2668	64 48 55	2676	66 26 7	2684	68 3 8	2692
	Regulus	W.	26 24 18	2586	28 3 33	2593	29 42 36	2602	41 21 28	2612
	Spica	E.	27 40 45	2631	26 2 32	2650	24 24 45	2671	22 47 26	2693
	Saturn	E.	59 31 37	2558	57 51 44	2569	56 12 5	2580	54 32 42	2591
	Antares	E.	73 34 49	2629	71 56 34	2641	70 18 35	2654	68 40 53	2666
20	Mars	W.	81 26 8	2790	83 0 49	2802	84 35 14	2815	86 9 23	2826
	Pollux	W.	76 5 11	2741	77 40 56	2752	79 16 27	2763	80 51 43	2774
	Regulus	W.	39 32 29	2663	41 9 59	2674	42 47 14	2685	44 24 14	2696
	Saturn	E.	46 19 36	2648	44 41 46	2660	43 4 12	2672	41 26 55	2684
	Antares	E.	60 36 46	2736	59 0 52	2749	57 25 16	2763	55 50 1	2779
21	Mars	W.	93 56 11	2890	95 28 43	2902	97 0 59	2914	98 33 0	2927
	Pollux	W.	88 44 24	2832	90 18 11	2844	91 51 41	2856	93 24 56	2869
	Regulus	W.	52 25 25	2754	54 0 54	2766	55 36 7	2778	57 11 4	2790
	Saturn	E.	33 24 38	2747	31 49 1	2761	30 13 42	2774	28 38 39	2787
	Antares	E.	47 58 55	2862	46 25 48	2881	44 53 4	2900	43 20 45	2920
	α Aquilæ	E.	97 5 11	3180	95 38 38	3190	94 12 17	3200	92 46 8	3211
22	Pollux	W.	101 7 14	2931	102 38 54	2943	104 10 18	2956	105 41 26	2969
	Regulus	W.	65 2 0	2847	66 35 27	2859	68 8 42	2869	69 41 37	2881
	Antares	E.	35 45 50	3054	34 16 20	3069	32 47 24	3092	31 19 5	3124
	α Aquilæ	E.	85 38 49	3273	84 14 6	3287	82 49 39	3301	81 25 29	3316
	Venus	E.	104 23 43	3256	102 58 41	3270	101 33 55	3282	100 9 23	3295
	Jupiter	E.	112 24 2	2924	110 52 14	2936	109 20 41	2947	107 49 22	2958
23	Pollux	W.	113 13 12	3031	114 42 46	3043	116 12 5	3056	117 41 9	3069

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Regulus	W.	71° 14′ 20″	2892	72° 46′ 49″	2902	74° 19′ 5″	2913	75° 51′ 7″	2924
	α Aquilæ	E.	80 1 36	3332	78 38 0	3347	77 14 43	3363	75 51 44	3379
	Venus	E.	98 45 6	3307	97 21 3	3319	95 57 14	3331	94 33 38	3343
	Jupiter	E.	106 18 17	2969	104 47 26	2981	103 16 49	2991	101 46 25	3001
24	Regulus	W.	83 28 9	2971	84 58 58	2980	86 29 35	2989	88 0 2	2997
	Spica	W.	30 10 12	3018	31 40 2	3023	33 9 46	3028	34 39 23	3033
	α Aquilæ	E.	69 1 45	3470	67 40 46	3490	66 20 11	3511	64 59 59	3534
	Venus	E.	87 38 53	3396	86 16 33	3406	84 54 23	3415	83 32 24	3424
	Jupiter	E.	94 17 34	3050	92 48 23	3059	91 19 23	3068	89 50 34	3076
	Fomalhaut	E.	101 24 31	3338	100 1 4	3345	98 37 44	3350	97 14 30	3356
	Sun	E.	131 45 54	3336	130 22 23	3345	128 59 4	3354	127 35 55	3364
25	Regulus	W.	95 29 53	3033	96 59 25	3039	98 28 50	3044	99 58 8	3050
	Spica	W.	42 6 0	3057	43 35 2	3062	45 3 58	3066	46 32 49	3070
	α Aquilæ	E.	58 25 10	3652	57 7 32	3680	55 50 23	3709	54 33 46	3740
	Venus	E.	76 44 56	3465	75 23 53	3471	74 2 57	3478	72 42 8	3484
	Jupiter	E.	82 28 50	3113	81 0 55	3118	79 33 8	3124	78 5 27	3129
	Fomalhaut	E.	90 20 2	3386	88 57 30	3393	87 35 5	3399	86 12 47	3406
	Sun	E.	120 42 35	3402	119 20 20	3408	117 58 14	3415	116 36 14	3420
26	Spica	W.	53 55 57	3066	55 24 25	3067	56 52 51	3068	58 21 15	3069
	Saturn	W.	21 56 26	3072	23 25 10	3073	24 53 54	3073	26 22 37	3073
	Venus	E.	65 59 33	3506	64 39 16	3509	63 19 3	3512	61 58 52	3515
	Jupiter	E.	70 48 30	3149	69 21 21	3153	67 54 14	3154	66 27 10	3156
	Fomalhaut	E.	79 23 7	3438	78 1 33	3445	76 40 7	3451	75 18 48	3456
	Sun	E.	109 47 39	3442	108 26 10	3445	107 4 44	3446	105 43 20	3448
27	Spica	W.	65 43 8	3087	67 11 33	3086	68 39 59	3084	70 8 28	3082
	Saturn	W.	33 46 22	3068	35 15 11	3065	36 44 3	3063	38 12 57	3060
	Venus	E.	55 18 20	3516	53 58 14	3515	52 38 7	3514	51 17 58	3512
	Jupiter	E.	59 12 10	3158	57 45 10	3157	56 18 9	3155	54 51 6	3153
	Fomalhaut	E.	68 34 14	3495	67 13 44	3503	65 53 23	3512	64 33 12	3520
	Sun	E.	98 56 40	3449	97 35 19	3448	96 13 57	3446	94 52 33	3444
28	Spica	W.	77 31 50	3062	79 0 45	3057	80 29 48	3052	81 58 57	3046
	Saturn	W.	45 38 34	3039	47 7 58	3034	48 37 28	3028	50 7 6	3022
	Venus	E.	44 36 27	3493	43 15 55	3488	41 55 17	3482	40 34 33	3476
	Jupiter	E.	47 35 6	3137	46 7 41	3132	44 40 11	3127	43 12 34	3121
	Fomalhaut	E.	57 54 53	3574	56 35 49	3587	55 17 0	3601	53 58 27	3617
	Sun	E.	88 4 41	3424	86 42 52	3419	85 20 57	3413	83 58 55	3406
29	Spica	W.	89 26 49	3007	90 56 53	2998	92 27 8	2989	93 57 34	2982
	Saturn	W.	57 37 25	2983	59 7 59	2974	60 38 44	2965	62 9 40	2956
	Fomalhaut	E.	47 30 34	3724	46 14 12	3752	44 58 20	3786	43 43 3	3822
	Sun	E.	77 6 38	3366	75 43 41	3355	74 20 33	3346	72 57 14	3336
30	Spica	W.	101 32 56	2926	103 4 42	2914	104 36 43	2901	106 9 0	2888
	Saturn	W.	69 47 42	2900	71 20 1	2887	72 52 36	2875	74 25 27	2862
	Antares	W.	56 7 42	3000	57 37 55	2985	59 8 27	2969	60 39 18	2954
	Sun	E.	65 57 28	3276	64 32 49	3263	63 7 54	3250	61 42 43	3236
31	Saturn	W.	82 13 55	2794	83 48 31	2780	85 23 25	2766	86 58 39	2752
	Antares	W.	68 18 22	2877	69 51 11	2861	71 24 19	2845	72 57 48	2829
	Sun	E.	54 32 39	3163	53 5 45	3147	51 38 32	3132	50 11 1	3116

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Regulus	W.	77° 22′ 57″	2934	78° 54′ 33″	2943	80° 25′ 57″	2953	81° 57′ 9″	2963
	α Aquilæ	E.	74 29 4	3397	73 6 44	3415	71 44 43	3432	70 23 3	3451
	Venus	E.	93 10 16	3354	91 47 7	3365	90 24 10	3376	89 1 26	3386
	Jupiter	E.	100 16 14	3012	98 46 16	3022	97 16 30	3031	95 46 56	3041
24	Regulus	W.	89 30 19	3005	91 0 26	3012	92 30 23	3019	94 0 12	3026
	Spica	W.	36 8 55	3039	37 38 20	3043	39 7 39	3048	40 36 53	3053
	α Aquilæ	E.	63 40 12	3555	62 20 47	3577	61 1 48	3601	59 43 15	3626
	Venus	E.	82 10 35	3433	80 48 56	3442	79 27 27	3450	78 6 7	3458
	Jupiter	E.	88 21 55	3083	86 53 25	3091	85 25 5	3099	83 56 54	3105
	Fomalhaut	E.	95 51 22	3362	94 28 22	3366	93 5 28	3374	91 42 42	3380
	Sun	E.	126 12 56	3372	124 50 7	3380	123 27 28	3387	122 4 57	3395
25	Regulus	W.	101 27 20	3055	102 56 25	3059	104 25 25	3063	105 54 20	3066
	Spica	W.	48 1 35	3074	49 30 16	3078	50 58 53	3080	52 27 27	3083
	α Aquilæ	E.	53 17 41	3772	52 2 9	3807	50 47 14	3844	49 32 56	3883
	Venus	E.	71 21 26	3489	70 0 50	3495	68 40 20	3499	67 19 54	3503
	Jupiter	E.	76 37 53	3134	75 10 24	3138	73 43 2	3143	72 15 44	3147
	Fomalhaut	E.	84 50 36	3412	83 28 33	3418	82 6 37	3424	80 44 48	3431
	Sun	E.	115 14 20	3425	113 52 32	3431	112 30 50	3435	111 9 12	3439
26	Spica	W.	59 49 38	3090	61 18 0	3090	62 46 22	3090	64 14 45	3089
	Saturn	W.	27 51 20	3072	29 20 4	3071	30 48 48	3070	32 17 34	3069
	Venus	E.	60 38 43	3515	59 18 36	3516	57 58 30	3517	56 38 25	3517
	Jupiter	E.	65 0 8	3158	63 33 8	3158	62 6 8	3158	60 39 9	3158
	Fomalhaut	E.	73 57 37	3465	72 36 34	3472	71 15 39	3480	69 54 52	3488
	Sun	E.	104 21 58	3450	103 0 38	3451	101 39 19	3451	100 18 0	3450
27	Spica	W.	71 37 0	3079	73 5 36	3075	74 34 16	3072	76 3 0	3067
	Saturn	W.	39 41 56	3057	41 10 58	3053	42 40 5	3049	44 9 16	3045
	Venus	E.	49 57 47	3509	48 37 33	3506	47 17 15	3502	45 56 53	3498
	Jupiter	E.	53 24 1	3151	51 56 53	3148	50 29 41	3145	49 2 26	3141
	Fomalhaut	E.	63 13 10	3530	61 53 19	3539	60 33 38	3550	59 14 9	3562
	Sun	E.	93 31 7	3441	92 9 37	3438	90 48 3	3434	89 26 25	3430
28	Spica	W.	83 28 14	3039	84 57 39	3031	86 27 13	3024	87 56 56	3016
	Saturn	W.	51 36 52	3015	53 6 46	3008	54 36 49	3000	56 7 2	2992
	Venus	E.	39 13 43	3470	37 52 45	3463	36 31 39	3455	35 10 25	3447
	Jupiter	E.	41 44 50	3115	40 16 58	3109	38 48 59	3101	37 20 51	3094
	Fomalhaut	E.	52 40 11	3634	51 22 13	3653	50 4 36	3675	48 47 22	3698
	Sun	E.	82 36 45	3399	81 14 27	3391	79 52 0	3383	78 29 24	3374
29	Spica	W.	95 28 12	2969	96 59 3	2959	98 30 7	2949	100 1 24	2937
	Saturn	W.	63 40 50	2945	65 12 12	2934	66 43 48	2923	68 15 38	2912
	Fomalhaut	E.	42 28 24	3863	41 14 27	3911	40 1 17	3963	38 49 1	4023
	Sun	E.	71 33 44	3325	70 10 1	3313	68 46 4	3301	67 21 54	3288
30	Spica	W.	107 41 33	2876	109 14 22	2863	110 47 28	2850	112 20 51	2836
	Saturn	W.	75 58 34	2849	77 31 58	2836	79 5 39	2822	80 39 38	2808
	Antares	W.	62 10 28	2939	63 41 57	2924	65 13 46	2909	66 45 54	2893
	Sun	E.	60 17 16	3222	58 51 33	3208	57 25 32	3193	55 59 15	3178
31	Saturn	W.	88 34 12	2735	90 10 5	2720	91 46 18	2705	93 22 51	2689
	Antares	W.	74 31 38	2813	76 5 49	2797	77 40 21	2781	79 15 13	2765
	Sun	E.	48 43 10	3100	47 15 0	3083	45 46 30	3067	44 17 40	3051

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.				
		h m s	s	° ′ ″	″	′ ″		s	m s	s
Mon.	1	0 41 33.51	9.102	N. 4 28 26.2	57.90	16 2.09		64.50	4 2.42	0.755
Tues.	2	0 45 11.97	9.107	4 51 33.0	57.69	16 1.81		64.52	3 44.37	0.749
Wed.	3	0 48 50.54	9.112	5 14 34.7	57.47	16 1.53		64.54	3 26.44	0.744
Thur.	4	0 52 29.26	9.118	5 37 30.9	57.23	16 1.25		64.56	3 8.65	0.738
Fri.	5	0 56 8.14	9.125	6 0 21.2	56.98	16 0.97		64.58	2 51.03	0.731
Sat.	6	0 59 47.19	9.132	6 23 5.2	56.71	16 0.70		64.61	2 33.58	0.723
Sun.	7	1 3 26.43	9.140	6 45 42.5	56.43	16 0.43		64.64	2 16.32	0.715
Mon.	8	1 7 5.88	9.149	7 8 13.0	56.13	16 0.16		64.67	1 59.27	0.706
Tues.	9	1 10 45.55	9.159	7 30 36.3	55.82	15 59.89		64.71	1 42.43	0.696
Wed.	10	1 14 25.46	9.169	7 52 51.9	55.49	15 59.62		64.75	1 25.82	0.686
Thur.	11	1 18 5.62	9.180	8 14 59.4	55.15	15 59.35		64.79	1 9.46	0.676
Fri.	12	1 21 46.04	9.192	8 36 58.4	54.79	15 59.09		64.83	0 53.38	0.665
Sat.	13	1 25 26.74	9.204	8 58 48.8	54.42	15 58.82		64.88	0 37.58	0.652
Sun.	14	1 29 7.76	9.217	9 20 30.3	54.04	15 58.56		64.93	0 22.09	0.639
Mon.	15	1 32 49.09	9.231	9 42 2.6	53.65	15 58.29		64.98	0 6.91	0.625
Tues.	16	1 36 30.74	9.245	10 3 25.2	53.24	15 58.03		65.04	0 7.94	0.611
Wed.	17	1 40 12.76	9.260	10 24 37.7	52.82	15 57.77		65.09	0 22.44	0.596
Thur.	18	1 43 55.16	9.276	10 45 39.8	52.38	15 57.51		65.15	0 36.56	0.580
Fri.	19	1 47 37.95	9.293	11 6 31.4	51.93	15 57.25		65.21	0 50.28	0.564
Sat.	20	1 51 21.15	9.310	11 27 12.0	51.47	15 56.99		65.27	1 3.60	0.547
Sun.	21	1 55 4.77	9.328	11 47 41.4	50.99	15 56.73		65.33	1 16.50	0.528
Mon.	22	1 58 48.84	9.347	12 7 59.2	50.50	15 56.47		65.39	1 28.95	0.509
Tues.	23	2 2 33.37	9.367	12 28 5.1	50.00	15 56.21		65.45	1 40.94	0.489
Wed.	24	2 6 18.38	9.387	12 47 58.8	49.48	15 55.95		65.52	1 52.45	0.469
Thur.	25	2 10 3.87	9.408	13 7 40.0	48.95	15 55.69		65.59	2 3.48	0.449
Fri.	26	2 13 49.85	9.429	13 27 8.2	48.41	15 55.44		65.66	2 14.02	0.428
Sat.	27	2 17 36.35	9.450	13 46 23.3	47.86	15 55.18		65.73	2 24.05	0.406
Sun.	28	2 21 23.39	9.472	14 5 25.0	47.29	15 54.93		65.81	2 33.54	0.384
Mon.	29	2 25 10.96	9.494	14 24 13.0	46.71	15 54.68		65.88	2 42.50	0.362
Tues.	30	2 26 59.05	9.516	14 42 46.8	46.11	15 54.44		65.96	2 50.94	0.341
Wed.	31	2 32 47.68	9.539	N.15 1 6.0	45.50	15 54.20		66.04	2 58.84	0.317

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from* / *added to* *Mean Time.*	Diff. for 1 hour	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	0 41 32.90	9.102	N. 4 28 22.3	57.90	4 2.47	0.755	0 37 30.43
Tues.	2	0 45 11.40	9.107	4 51 29.4	57.69	3 44.42	0.749	0 41 26.98
Wed.	3	0 48 50.02	9.112	5 14 31.4	57.47	3 26.49	0.744	0 45 23.53
Thur.	4	0 52 28.78	9.118	5 37 27.9	57.23	3 8.70	0.738	0 49 20.08
Fri.	5	0 56 7.70	9.125	6 0 18.4	56.98	2 51.06	0.731	0 53 16.64
Sat.	6	0 59 46.80	9.132	6 23 2.7	56.71	2 33.61	0.723	0 57 13.19
Sun.	7	1 3 26.09	9.140	6 45 40.4	56.43	2 16.35	0.715	1 1 9.74
Mon.	8	1 7 5.58	9.149	7 8 11.2	56.13	1 59.29	0.706	1 5 6.29
Tues.	9	1 10 45.29	9.159	7 30 34.7	55.82	1 42.45	0.696	1 9 2.84
Wed.	10	1 14 25.24	9.169	7 52 50.5	55.49	1 25.84	0.686	1 12 59.40
Thur.	11	1 18 5.43	9.180	8 14 58.3	55.15	1 9.48	0.676	1 16 55.95
Fri.	12	1 21 45.89	9.192	8 36 57.6	54.79	0 53.39	0.665	1 20 52.50
Sat.	13	1 25 26.64	9.204	8 58 48.3	54.42	0 37.59	0.652	1 24 49.05
Sun.	14	1 29 7.70	9.217	9 20 30.0	54.04	0 22.09	0.639	1 28 45.61
Mon.	15	1 32 49.07	9.231	9 42 2.5	53.65	0 6.91	0.625	1 32 42.16
Tues.	16	1 36 30.77	9.245	10 3 25.3	53.24	0 7.94	0.611	1 36 38.71
Wed.	17	1 40 12.82	9.260	10 24 38.0	52.82	0 22.44	0.596	1 40 35.26
Thur.	18	1 43 55.25	9.276	10 45 40.3	52.38	0 36.57	0.580	1 44 31.82
Fri.	19	1 47 38.08	9.293	11 6 32.1	51.93	0 50.29	0.564	1 48 28.37
Sat.	20	1 51 21.31	9.310	11 27 12.9	51.47	1 3.61	0.549	1 52 24.92
Sun.	21	1 55 4.97	9.328	11 47 42.5	50.99	1 16.51	0.528	1 56 21.48
Mon.	22	1 58 49.07	9.347	12 8 0.4	50.50	1 28.96	0.509	2 0 18.03
Tues.	23	2 2 33.63	9.367	12 28 6.4	50.00	1 40.95	0.489	2 4 14.58
Wed.	24	2 6 18.67	9.387	12 48 0.3	49.48	1 52.47	0.469	2 8 11.14
Thur.	25	2 10 4.19	9.408	13 7 41.6	48.95	2 3.50	0.449	2 12 7.69
Fri.	26	2 13 50.20	9.429	13 27 10.0	48.41	2 14.04	0.428	2 16 4.24
Sat.	27	2 17 36.73	9.450	13 46 25.3	47.86	2 24.07	0.406	2 20 0.80
Sun.	28	2 21 23.79	9.472	14 5 27.1	47.29	2 33.56	0.384	2 23 57.35
Mon.	29	2 25 11.38	9.494	14 24 15.1	46.71	2 42.52	0.362	2 27 53.90
Tues.	30	2 28 59.50	9.516	14 42 49.0	46.11	2 50.96	0.341	2 31 50.46
Wed.	31	2 32 48.15	9.539	N.15 1 8.3	45.50	2 58.86	0.317	2 35 47.01

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	91	11 18 18.2	18 8.4	147.90	+0.31	9.9999594	53.0	23 18 39.81
2	92	12 17 27.0	17 17.1	147.83	0.18	0.0000862	52.7	23 14 43.91
3	93	13 16 33.9	16 23.9	147.75	+0.04	.0002124	52.4	23 10 48.00
4	94	14 15 38.8	15 28.7	147.66	—0.09	.0003378	52.1	23 6 52.09
5	95	15 14 41.6	14 31.5	147.57	0.20	.0004625	51.7	23 2 56.18
6	96	16 13 42.3	13 32.1	147.48	0.29	.0005863	51.4	22 59 0.27
7	97	17 12 40.8	12 30.5	147.39	0.37	.0007093	51.1	22 55 4.36
8	98	18 11 37.1	11 26.7	147.30	0.42	.0008316	50.8	22 51 8.46
9	99	19 10 31.2	10 20.7	147.21	0.44	.0009532	50.5	22 47 12.56
10	100	20 9 23.1	9 12.6	147.11	0.43	.0010742	50.3	22 43 16.66
11	101	21 8 12.7	8 2.1	147.02	0.38	.0011947	50.1	22 39 20.75
12	102	22 6 59.9	6 49.2	146.92	0.31	.0013148	50.0	22 35 24.84
13	103	23 5 44.9	5 34.1	146.83	0.22	.0014345	49.8	22 31 28.93
14	104	24 4 27.7	4 16.8	146.74	—0.10	.0015539	49.7	22 27 33.02
15	105	25 3 8.3	2 57.3	146.65	+0.03	.0016730	49.6	22 23 37.11
16	106	26 1 46.7	1 35.6	146.55	0.16	.0017919	49.5	22 19 41.21
17	107	27 0 22.9	0 11.7	146.46	0.30	.0019107	49.5	22 15 45.31
18	108	27 58 57.0	58 45.7	146.38	0.43	.0020295	49.5	22 11 49.40
19	109	28 57 29.2	57 17.8	146.30	0.54	.0021483	49.5	22 7 53.50
20	110	29 55 59.6	55 48.1	146.23	0.63	.0022669	49.4	22 3 57.59
21	111	30 54 28.2	54 16.6	146.15	0.70	.0023854	49.3	22 0 1.68
22	112	31 52 55.0	52 43.3	146.08	0.74	.0025037	49.2	21 56 5.78
23	113	32 51 20.2	51 8.4	146.01	0.75	.0026216	49.0	21 52 9.87
24	114	33 49 43.6	49 31.7	145.94	0.73	.0027391	48.8	21 48 13.96
25	115	34 48 5.4	47 53.4	145.87	0.68	.0028561	48.5	21 44 18.05
26	116	35 46 25.7	46 13.6	145.81	0.61	.0029723	48.2	21 40 22.15
27	117	36 44 44.5	44 32.3	145.75	0.51	.0030875	47.8	21 36 26.24
28	118	37 43 1.7	42 49.4	145.69	0.39	.0032017	47.3	21 32 30.33
29	119	38 41 17.4	41 5.0	145.63	0.26	.0033147	46.7	21 28 34.42
30	120	39 39 31.6	39 19.1	145.56	0.13	.0034263	46.1	21 24 38.51
31	121	40 37 44.3	37 31.7	145.50	+0.00	0.0035363	45.5	21 20 42.61

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 25.4	15 31.6	56 29.7	+1.88	56 52.6	+1.93	22 5.2	2.03	26.1
2	15 38.0	15 44.3	57 15.8	1.94	57 39.0	1.91	22 54.3	2.07	27.1
3	15 50.5	15 56.3	58 1.6	1.84	58 23.1	1.74	23 44.6	2.13	28.1
4	16 1.6	16 6.6	58 43.1	1.59	59 1.2	1.41	☌		29.1
5	16 11.0	16 14.6	59 17.0	1.21	59 30.2	0.98	0 36.6	2.20	0.6
6	16 17.4	16 19.4	59 40.6	0.74	59 48.0	0.50	1 30.5	2.29	1.6
7	16 20.6	16 21.1	59 52.5	+0.26	59 54.2	+0.03	2 26.5	2.37	2.6
8	16 20.8	16 19.9	59 53.2	−0.19	59 49.6	−0.39	3 24.2	2.42	3.6
9	16 18.3	16 16.2	59 43.8	0.57	59 36.1	0.72	4 22.8	2.44	4.6
10	16 13.6	16 10.6	59 26.6	0.85	59 15.8	0.95	5 21.3	2.41	5.6
11	16 7.4	16 3.9	59 3.9	1.03	58 51.2	1.09	6 18.6	2.34	6.6
12	16 0.3	15 56.5	58 37.8	1.13	58 24.0	1.17	7 13.9	2.25	7.6
13	15 52.7	15 48.8	58 9.8	1.19	57 55.4	1.21	8 6.7	2.15	8.6
14	15 44.8	15 40.8	57 40.7	1.22	57 26.0	1.23	8 57.2	2.06	9.6
15	15 36.7	15 32.7	57 11.2	1.24	56 56.3	1.24	9 45.8	2.00	10.6
16	15 28.6	15 24.6	56 41.4	1.24	56 26.5	1.23	10 33.0	1.95	11.6
17	15 20.5	15 16.6	56 11.8	1.22	55 57.2	1.20	11 19.4	1.92	12.6
18	15 12.7	15 8.9	55 43.0	1.17	55 29.1	1.14	12 5.4	1.92	13.6
19	15 5.3	15 1.8	55 15.7	1.09	55 3.1	1.02	12 51.5	1.93	14.6
20	14 58.6	14 55.7	54 51.3	0.94	54 40.5	0.85	13 38.0	1.94	15.6
21	14 53.1	14 50.8	54 30.9	0.74	54 22.7	0.62	14 24.8	1.96	16.6
22	14 49.0	14 47.7	54 16.1	0.48	54 11.3	−0.32	15 12.0	1.97	17.6
23	14 47.0	14 46.8	54 8.4	−0.15	54 7.7	+0.03	15 59.3	1.97	18.6
24	14 47.2	14 48.2	54 9.2	+0.22	54 13.0	0.42	16 46.7	1.97	19.6
25	14 49.9	14 52.3	54 19.2	0.62	54 27.9	0.83	17 33.9	1.96	20.6
26	14 55.3	14 59.1	54 39.1	1.04	54 52.9	1.25	18 20.9	1.96	21.6
27	15 3.5	15 8.5	55 9.0	1.44	55 27.5	1.63	19 7.8	1.96	22.6
28	15 14.1	15 20.3	55 48.2	1.80	56 10.8	1.96	19 55.0	1.98	23.6
29	15 26.9	15 33.9	56 35.1	2.09	57 0.8	2.19	20 42.8	2.02	24.6
30	15 41.2	15 48.5	57 27.5	2.24	57 54.6	2.25	21 31.8	2.08	25.6
31	15 55.8	16 3.0	58 21.4	+2.21	58 47.6	+2.13	22 22.7	2.17	26.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 59 38.64	2.1055	S. 9 54 30.1	8.561	0	23 41 54.61	2.1654	S. 2 7 4.7	10.625
1	22 1 44.99	2.1062	9 45 54.7	8.620	1	23 44 4.59	2.1673	1 56 26.5	10.648
2	22 3 51.39	2.1069	9 37 15.7	8.678	2	23 46 14.69	2.1693	1 45 46.9	10.670
3	22 5 57.82	2.1076	9 28 33.2	8.737	3	23 48 24.91	2.1713	1 35 6.1	10.691
4	22 8 4.30	2.1084	9 19 47.3	8.794	4	23 50 35.25	2.1733	1 24 24.0	10.711
5	22 10 10.83	2.1091	9 10 58.0	8.851	5	23 52 45.71	2.1753	1 13 40.8	10.730
6	22 12 17.40	2.1099	9 2 5.2	8.907	6	23 54 56.29	2.1773	1 2 56.5	10.747
7	22 14 24.02	2.1107	8 53 9.1	8.963	7	23 57 6.99	2.1794	0 52 11.1	10.764
8	22 16 30.69	2.1116	8 44 9.7	9.018	8	23 59 17.82	2.1816	0 41 24.8	10.780
9	22 18 37.41	2.1125	8 35 7.0	9.073	9	0 1 28.78	2.1837	0 30 37.5	10.795
10	22 20 44.19	2.1133	8 26 1.0	9.128	10	0 3 39.87	2.1859	0 19 49.4	10.808
11	22 22 51.01	2.1142	8 16 51.8	9.180	11	0 5 51.09	2.1881	S. 0 9 0.5	10.821
12	22 24 57.89	2.1151	8 7 39.4	9.232	12	0 8 2.44	2.1903	N. 0 1 49.1	10.832
13	22 27 4.82	2.1161	7 58 23.9	9.284	13	0 10 13.93	2.1926	0 12 39.4	10.843
14	22 29 11.82	2.1171	7 49 5.3	9.336	14	0 12 25.55	2.1948	0 23 30.3	10.853
15	22 31 18.87	2.1180	7 39 43.6	9.386	15	0 14 37.31	2.1972	0 34 21.7	10.861
16	22 33 25.98	2.1190	7 30 18.9	9.436	16	0 16 49.21	2.1995	0 45 13.6	10.869
17	22 35 33.15	2.1201	7 20 51.2	9.485	17	0 19 1.25	2.2019	0 56 5.9	10.875
18	22 37 40.39	2.1212	7 11 20.6	9.534	18	0 21 13.44	2.2043	1 6 58.6	10.880
19	22 39 47.69	2.1223	7 1 47.1	9.582	19	0 23 25.77	2.2067	1 17 51.5	10.884
20	22 41 55.06	2.1234	6 52 10.8	9.629	20	0 25 38.24	2.2092	1 28 44.6	10.887
21	22 44 2.50	2.1245	6 42 31.7	9.675	21	0 27 50.87	2.2117	1 39 37.9	10.889
22	22 46 10.00	2.1257	6 32 49.8	9.721	22	0 30 3.64	2.2142	1 50 31.2	10.889
23	22 48 17.58	2.1268	S. 6 23 5.2	9.766	23	0 32 16.57	2.2167	N. 2 1 24.6	10.889
	TUESDAY 2.					THURSDAY 4.			
0	22 50 25.22	2.1280	S. 6 13 17.9	9.810	0	0 34 29.65	2.2192	N. 2 12 17.9	10.887
1	22 52 32.94	2.1293	6 3 27.9	9.854	1	0 36 42.88	2.2218	2 23 11.0	10.884
2	22 54 40.73	2.1306	5 53 35.4	9.897	2	0 38 56.27	2.2245	2 34 3.9	10.880
3	22 56 48.61	2.1319	5 43 40.3	9.938	3	0 41 9.82	2.2271	2 44 56.6	10.875
4	22 58 56.56	2.1332	5 33 42.8	9.980	4	0 43 23.53	2.2297	2 55 48.9	10.869
5	23 1 4.59	2.1345	5 23 42.8	10.020	5	0 45 37.39	2.2324	3 6 40.8	10.861
6	23 3 12.70	2.1359	5 13 40.4	10.059	6	0 47 51.42	2.2352	3 17 32.3	10.853
7	23 5 20.90	2.1373	5 3 35.7	10.098	7	0 50 5.62	2.2380	3 28 23.2	10.843
8	23 7 29.18	2.1387	4 53 28.7	10.136	8	0 52 19.98	2.2408	3 39 13.5	10.832
9	23 9 37.55	2.1402	4 43 19.4	10.173	9	0 54 34.51	2.2435	3 50 3.1	10.820
10	23 11 46.01	2.1417	4 33 7.9	10.209	10	0 56 49.20	2.2463	4 0 51.9	10.808
11	23 13 54.55	2.1432	4 22 54.3	10.245	11	0 59 4.06	2.2492	4 11 39.9	10.792
12	23 16 3.19	2.1447	4 12 38.5	10.280	12	1 1 19.10	2.2521	4 22 26.9	10.776
13	23 18 11.92	2.1463	4 2 20.7	10.313	13	1 3 34.31	2.2549	4 33 12.9	10.758
14	23 20 20.75	2.1479	3 52 0.9	10.346	14	1 5 49.69	2.2578	4 43 57.9	10.740
15	23 22 29.67	2.1495	3 41 39.1	10.378	15	1 8 5.24	2.2607	4 54 41.7	10.720
16	23 24 38.69	2.1512	3 31 15.5	10.409	16	1 10 20.97	2.2637	5 5 24.3	10.700
17	23 26 47.81	2.1529	3 20 50.0	10.440	17	1 12 36.88	2.2667	5 16 5.6	10.678
18	23 28 57.04	2.1546	3 10 22.7	10.469	18	1 14 52.97	2.2697	5 26 45.6	10.655
19	23 31 6.36	2.1563	2 59 53.7	10.497	19	1 17 9.24	2.2726	5 37 24.2	10.630
20	23 33 15.79	2.1581	2 49 23.0	10.525	20	1 19 25.68	2.2756	5 48 1.2	10.604
21	23 35 25.33	2.1599	2 38 50.7	10.551	21	1 21 42.31	2.2787	5 58 36.7	10.577
22	23 37 34.98	2.1617	2 28 16.9	10.577	22	1 23 59.12	2.2817	6 9 10.5	10.549
23	23 39 44.74	2.1636	2 17 41.5	10.602	23	1 26 16.12	2.2848	6 19 42.6	10.519
24	23 41 54.61	2.1654	S. 2 7 4.7	10.625	24	1 28 33.30	2.2879	N. 6 30 12.8	10.488

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 28 33.30	2.2879	N. 6 30 12.8	10.488
1	1 30 50.67	2.2910	6 40 41.1	10.456
2	1 33 8.22	2.2942	6 51 7.5	10.423
3	1 35 25.96	2.2973	7 1 31.8	10.388
4	1 37 43.89	2.3004	7 11 54.0	10.352
5	1 40 2.01	2.3036	7 22 14.0	10.316
6	1 42 20.32	2.3067	7 32 31.8	10.277
7	1 44 38.82	2.3099	7 42 47.3	10.237
8	1 46 57.51	2.3131	7 53 0.4	10.196
9	1 49 16.39	2.3163	8 3 10.9	10.154
10	1 51 35.47	2.3196	8 13 18.8	10.110
11	1 53 54.74	2.3228	8 23 24.1	10.065
12	1 56 14.20	2.3260	8 33 26.6	10.018
13	1 58 33.86	2.3292	8 43 26.3	9.971
14	2 0 53.71	2.3324	8 53 23.1	9.923
15	2 3 13.75	2.3357	9 3 17.0	9.873
16	2 5 33.99	2.3390	9 13 7.8	9.822
17	2 7 54.43	2.3422	9 22 55.6	9.769
18	2 10 15.05	2.3454	9 32 40.2	9.715
19	2 12 35.87	2.3487	9 42 21.5	9.660
20	2 14 56.89	2.3520	9 51 59.5	9.604
21	2 17 18.11	2.3553	10 1 34.0	9.546
22	2 19 39.53	2.3587	10 11 5.0	9.487
23	2 22 1.15	2.3619	N.10 20 32.4	9.427

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 24 22.96	2.3652	N.10 29 56.2	9.365
1	2 26 44.97	2.3684	10 39 16.3	9.303
2	2 29 7.17	2.3716	10 48 32.6	9.239
3	2 31 29.56	2.3748	10 57 45.0	9.174
4	2 33 52.15	2.3781	11 6 53.5	9.108
5	2 36 14.93	2.3812	11 15 58.0	9.040
6	2 38 37.89	2.3843	11 24 58.4	8.971
7	2 41 1.04	2.3875	11 33 54.6	8.901
8	2 43 24.39	2.3908	11 42 46.5	8.830
9	2 45 47.94	2.3940	11 51 34.1	8.758
10	2 48 11.67	2.3972	12 0 17.4	8.684
11	2 50 35.60	2.4003	12 8 56.2	8.609
12	2 52 59.71	2.4034	12 17 30.4	8.533
13	2 55 24.01	2.4066	12 26 0.1	8.455
14	2 57 48.49	2.4096	12 34 25.1	8.377
15	3 0 13.16	2.4127	12 42 45.4	8.298
16	3 2 38.01	2.4157	12 51 0.8	8.217
17	3 5 3.05	2.4187	12 59 11.4	8.135
18	3 7 28.26	2.4217	13 7 17.0	8.052
19	3 9 53.66	2.4247	13 15 17.7	7.968
20	3 12 19.23	2.4277	13 23 13.3	7.883
21	3 14 44.98	2.4306	13 31 3.7	7.797
22	3 17 10.90	2.4335	13 38 48.9	7.709
23	3 19 37.00	2.4364	13 46 28.8	7.620
24	3 22 3.27	2.4392	N.13 54 3.3	7.531

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 22 3.27	2.4392	N.13 54 3.3	7.531
1	3 24 29.71	2.4420	14 1 32.4	7.440
2	3 26 56.31	2.4447	14 8 56.1	7.348
3	3 29 23.08	2.4475	14 16 14.2	7.256
4	3 31 50.01	2.4502	14 23 26.8	7.162
5	3 34 17.10	2.4528	14 30 33.7	7.067
6	3 36 44.35	2.4555	14 37 34.9	6.972
7	3 39 11.76	2.4581	14 44 30.3	6.875
8	3 41 39.32	2.4607	14 51 19.9	6.777
9	3 44 7.04	2.4632	14 58 3.6	6.679
10	3 46 34.90	2.4656	15 4 41.3	6.579
11	3 49 2.91	2.4681	15 11 13.0	6.478
12	3 51 31.07	2.4705	15 17 38.7	6.377
13	3 53 59.37	2.4728	15 23 58.3	6.275
14	3 56 27.80	2.4750	15 30 11.7	6.171
15	3 58 56.37	2.4772	15 36 18.9	6.067
16	4 1 25.07	2.4794	15 42 19.8	5.962
17	4 3 53.90	2.4816	15 48 14.4	5.857
18	4 6 22.86	2.4837	15 54 2.6	5.750
19	4 8 51.95	2.4857	15 59 44.4	5.643
20	4 11 21.15	2.4877	16 5 19.7	5.535
21	4 13 50.47	2.4897	16 10 48.5	5.426
22	4 16 19.91	2.4916	16 16 10.8	5.316
23	4 18 49.46	2.4934	N.16 21 26.4	5.206

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 21 19.11	2.4951	N.16 26 35.4	5.096
1	4 23 48.87	2.4968	16 31 37.7	4.983
2	4 26 18.72	2.4984	16 36 33.3	4.870
3	4 28 48.68	2.5000	16 41 22.1	4.757
4	4 31 18.72	2.5015	16 46 4.2	4.644
5	4 33 48.86	2.5029	16 50 39.4	4.529
6	4 36 19.08	2.5043	16 55 7.7	4.415
7	4 38 49.38	2.5056	16 59 29.1	4.299
8	4 41 19.76	2.5069	17 3 43.6	4.183
9	4 43 50.21	2.5082	17 7 51.1	4.067
10	4 46 20.74	2.5093	17 11 51.6	3.950
11	4 48 51.33	2.5103	17 15 45.1	3.832
12	4 51 21.98	2.5113	17 19 31.5	3.714
13	4 53 52.69	2.5122	17 23 10.8	3.595
14	4 56 23.45	2.5131	17 26 42.9	3.476
15	4 58 54.26	2.5139	17 30 7.9	3.357
16	5 1 25.12	2.5147	17 33 25.7	3.237
17	5 3 56.02	2.5154	17 36 36.3	3.117
18	5 6 26.96	2.5160	17 39 39.7	2.996
19	5 8 57.94	2.5165	17 42 35.9	2.876
20	5 11 28.94	2.5168	17 45 24.8	2.755
21	5 13 59.96	2.5172	17 48 6.5	2.633
22	5 16 31.01	2.5176	17 50 40.8	2.512
23	5 19 2.07	2.5178	17 53 7.9	2.390
24	5 21 33.14	2.5179	N.17 55 27.6	2.267

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 21 33.14	2.5179	N.17 55 27.6	2.267
1	5 24 4.22	2.5180	17 57 39.9	2.145
2	5 26 35.30	2.5180	17 59 44.9	2.022
3	5 29 6.38	2.5179	18 1 42.6	1.900
4	5 31 37.46	2.5178	18 3 32.9	1.777
5	5 34 8.52	2.5176	18 5 15.8	1.654
6	5 36 39.57	2.5173	18 6 51.3	1.531
7	5 39 10.60	2.5169	18 8 19.5	1.408
8	5 41 41.60	2.5165	18 9 40.3	1.285
9	5 44 12.58	2.5161	18 10 53.7	1.162
10	5 46 43.53	2.5155	18 11 59.7	1.038
11	5 49 14.44	2.5148	18 12 58.4	0.915
12	5 51 45.31	2.5141	18 13 49.6	0.792
13	5 54 16.13	2.5133	18 14 33.4	0.668
14	5 56 46.91	2.5125	18 15 9.8	0.545
15	5 59 17.63	2.5115	18 15 38.8	0.422
16	6 1 48.29	2.5105	18 16 0.5	0.299
17	6 4 18.89	2.5095	18 16 14.8	0.177
18	6 6 49.43	2.5083	18 16 21.7	0.054
19	6 9 19.89	2.5071	18 16 21.3	0.068
20	6 11 50.28	2.5058	18 16 13.5	0.190
21	6 14 20.59	2.5044	18 15 58.4	0.312
22	6 16 50.81	2.5029	18 15 36.0	0.434
23	6 19 20.94	2.5014	N.18 15 6.3	0.556

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 21 50.98	2.4998	N.18 14 29.3	0.677
1	6 24 20.92	2.4983	18 13 45.0	0.798
2	6 26 50.77	2.4966	18 12 53.5	0.919
3	6 29 20.51	2.4948	18 11 54.7	1.040
4	6 31 50.15	2.4929	18 10 48.7	1.160
5	6 34 19.67	2.4910	18 9 35.5	1.279
6	6 36 49.07	2.4891	18 8 15.1	1.399
7	6 39 18.36	2.4872	18 6 47.6	1.518
8	6 41 47.53	2.4851	18 5 13.0	1.636
9	6 44 16.57	2.4828	18 3 31.3	1.754
10	6 46 45.47	2.4806	18 1 42.5	1.872
11	6 49 14.24	2.4784	17 59 46.7	1.990
12	6 51 42.88	2.4761	17 57 43.8	2.106
13	6 54 11.37	2.4737	17 55 33.9	2.222
14	6 56 39.72	2.4712	17 53 17.1	2.338
15	6 59 7.92	2.4687	17 50 53.3	2.453
16	7 1 35.97	2.4662	17 48 22.6	2.568
17	7 4 3.87	2.4636	17 45 45.1	2.682
18	7 6 31.61	2.4609	17 43 0.8	2.796
19	7 8 59.18	2.4582	17 40 9.6	2.909
20	7 11 26.59	2.4556	17 37 11.7	3.021
21	7 13 53.84	2.4527	17 34 7.1	3.133
22	7 16 20.91	2.4497	17 30 55.8	3.244
23	7 18 47.81	2.4469	17 27 37.9	3.355
24	7 21 14.54	2.4440	N.17 24 13.3	3.464

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 21 14.54	2.4440	N.17 24 13.3	3.464
1	7 23 41.09	2.4409	17 20 42.2	3.573
2	7 26 7.45	2.4378	17 17 4.5	3.682
3	7 28 33.63	2.4348	17 13 20.3	3.790
4	7 30 59.63	2.4317	17 9 29.7	3.897
5	7 33 25.44	2.4286	17 5 32.7	4.003
6	7 35 51.06	2.4253	17 1 29.3	4.109
7	7 38 16.48	2.4221	16 57 19.6	4.214
8	7 40 41.71	2.4188	16 53 3.7	4.318
9	7 43 6.74	2.4155	16 48 41.5	4.421
10	7 45 31.57	2.4122	16 44 13.1	4.524
11	7 47 56.20	2.4088	16 39 38.6	4.626
12	7 50 20.62	2.4053	16 34 58.0	4.727
13	7 52 44.84	2.4019	16 30 11.3	4.828
14	7 55 8.85	2.3984	16 25 18.7	4.927
15	7 57 32.65	2.3949	16 20 20.1	5.026
16	7 59 56.24	2.3915	16 15 15.6	5.124
17	8 2 19.63	2.3880	16 10 5.3	5.221
18	8 4 42.80	2.3842	16 4 49.1	5.317
19	8 7 5.74	2.3806	15 59 27.2	5.412
20	8 9 28.47	2.3771	15 53 59.6	5.507
21	8 11 50.99	2.3735	15 48 26.4	5.600
22	8 14 13.29	2.3698	15 42 47.6	5.693
23	8 16 35.36	2.3661	N.15 37 3.2	5.786

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 18 57.22	2.3624	N.15 31 13.4	5.876
1	8 21 18.85	2.3587	15 25 18.1	5.966
2	8 23 40.26	2.3550	15 19 17.6	6.056
3	8 26 1.45	2.3512	15 13 11.6	6.145
4	8 28 22.41	2.3475	15 7 0.3	6.231
5	8 30 43.15	2.3438	15 0 43.8	6.318
6	8 33 3.67	2.3400	14 54 22.2	6.403
7	8 35 23.95	2.3362	14 47 55.4	6.488
8	8 37 44.01	2.3324	14 41 23.6	6.572
9	8 40 3.84	2.3286	14 34 46.8	6.655
10	8 42 23.44	2.3247	14 28 5.0	6.737
11	8 44 42.81	2.3210	14 21 18.4	6.818
12	8 47 1.96	2.3172	14 14 26.9	6.898
13	8 49 20.87	2.3133	14 7 30.7	6.977
14	8 51 39.56	2.3096	14 0 29.7	7.055
15	8 53 58.02	2.3057	13 53 24.1	7.132
16	8 56 16.25	2.3020	13 46 13.9	7.208
17	8 58 34.26	2.2982	13 38 59.1	7.284
18	9 0 52.03	2.2943	13 31 39.8	7.358
19	9 3 9.57	2.2905	13 24 16.1	7.431
20	9 5 26.89	2.2867	13 16 48.1	7.504
21	9 7 43.98	2.2829	13 9 15.7	7.575
22	9 10 0.84	2.2791	13 1 39.1	7.645
23	9 12 17.47	2.2753	12 53 58.3	7.715
24	9 14 33.88	2.2716	N.12 46 13.4	7.783

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 14 33.88	2.2716	N. 12 46 13.4	7.788
1	9 16 50.06	2.2678	12 38 24.4	7.851
2	9 19 6.02	2.2641	12 30 31.3	7.917
3	9 21 21.75	2.2603	12 22 34.3	7.983
4	9 23 37.26	2.2566	12 14 33.4	8.048
5	9 25 52.54	2.2529	12 6 28.6	8.111
6	9 28 7.61	2.2492	11 58 20.0	8.174
7	9 30 22.45	2.2455	11 50 7.7	8.236
8	9 32 37.07	2.2418	11 41 51.8	8.296
9	9 34 51.47	2.2382	11 33 32.2	8.356
10	9 37 5.65	2.2345	11 25 9.1	8.414
11	9 39 19.61	2.2309	11 16 42.5	8.472
12	9 41 33.36	2.2273	11 8 12.5	8.529
13	9 43 46.89	2.2237	10 59 39.1	8.584
14	9 46 0.21	2.2202	10 51 2.4	8.639
15	9 48 13.31	2.2167	10 42 22.4	8.693
16	9 50 26.21	2.2132	10 33 39.2	8.746
17	9 52 38.89	2.2097	10 24 52.9	8.798
18	9 54 51.37	2.2062	10 16 3.5	8.849
19	9 57 3.63	2.2027	10 7 11.0	8.899
20	9 59 15.69	2.1993	9 58 15.6	8.948
21	10 1 27.55	2.1959	9 49 17.3	8.995
22	10 3 39.20	2.1926	9 40 16.1	9.042
23	10 5 50.66	2.1892	N. 9 31 12.2	9.088

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 8 1.91	2.1858	N. 9 22 5.5	9.133
1	10 10 12.96	2.1826	9 12 56.1	9.178
2	10 12 23.82	2.1794	9 3 44.1	9.221
3	10 14 34.49	2.1762	8 54 29.6	9.263
4	10 16 44.96	2.1729	8 45 12.6	9.304
5	10 18 55.24	2.1697	8 35 53.1	9.345
6	10 21 5.32	2.1666	8 26 31.2	9.384
7	10 23 15.22	2.1634	8 17 7.0	9.422
8	10 25 24.93	2.1603	8 7 40.6	9.459
9	10 27 34.46	2.1573	7 58 11.9	9.496
10	10 29 43.81	2.1543	7 48 41.1	9.531
11	10 31 52.98	2.1513	7 39 8.2	9.566
12	10 34 1.97	2.1483	7 29 33.2	9.599
13	10 36 10.78	2.1454	7 19 56.2	9.632
14	10 38 19.42	2.1426	7 10 17.3	9.664
15	10 40 27.89	2.1397	7 0 36.5	9.695
16	10 42 36.18	2.1368	6 50 53.9	9.725
17	10 44 44.30	2.1340	6 41 9.6	9.754
18	10 46 52.26	2.1313	6 31 23.5	9.782
19	10 49 0.06	2.1286	6 21 35.8	9.809
20	10 51 7.69	2.1258	6 11 46.5	9.835
21	10 53 15.16	2.1232	6 1 55.6	9.860
22	10 55 22.47	2.1205	5 52 3.3	9.884
23	10 57 29.62	2.1179	5 42 9.5	9.907
24	10 59 36.62	2.1153	N. 5 32 14.4	9.930

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 59 36.62	2.1153	N. 5 32 14.4	9.930
1	11 1 43.46	2.1128	5 22 17.9	9.951
2	11 3 50.16	2.1104	5 12 20.2	9.972
3	11 5 56.71	2.1079	5 2 21.3	9.991
4	11 8 3.11	2.1054	4 52 21.2	10.010
5	11 10 9.36	2.1030	4 42 20.0	10.028
6	11 12 15.47	2.1007	4 32 17.8	10.045
7	11 14 21.45	2.0984	4 22 14.6	10.061
8	11 16 27.28	2.0961	4 12 10.5	10.076
9	11 18 32.98	2.0938	4 2 5.5	10.090
10	11 20 38.54	2.0916	3 51 59.6	10.104
11	11 22 43.97	2.0894	3 41 53.0	10.116
12	11 24 49.27	2.0873	3 31 45.7	10.127
13	11 26 54.44	2.0852	3 21 37.7	10.138
14	11 28 59.49	2.0832	3 11 29.1	10.148
15	11 31 4.42	2.0811	3 1 19.9	10.157
16	11 33 9.22	2.0790	2 51 10.2	10.165
17	11 35 13.90	2.0771	2 41 0.1	10.172
18	11 37 18.47	2.0752	2 30 49.6	10.179
19	11 39 22.93	2.0733	2 20 38.7	10.184
20	11 41 27.27	2.0714	2 10 27.5	10.189
21	11 43 31.50	2.0696	2 0 16.0	10.192
22	11 45 35.62	2.0678	1 50 4.4	10.195
23	11 47 39.64	2.0662	N. 1 39 52.6	10.197

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 49 43.56	2.0644	N. 1 29 40.7	10.199
1	11 51 47.37	2.0627	1 19 28.7	10.199
2	11 53 51.09	2.0611	1 9 16.8	10.199
3	11 55 54.71	2.0595	0 59 4.9	10.197
4	11 57 58.23	2.0580	0 48 53.1	10.195
5	12 0 1.67	2.0565	0 38 41.5	10.192
6	12 2 5.01	2.0549	0 28 30.1	10.188
7	12 4 8.26	2.0535	0 18 18.9	10.184
8	12 6 11.43	2.0521	N. 0 8 8.0	10.178
9	12 8 14.51	2.0507	S. 0 2 2.5	10.172
10	12 10 17.52	2.0494	0 12 12.6	10.165
11	12 12 20.44	2.0481	0 22 22.3	10.157
12	12 14 23.29	2.0468	0 32 31.4	10.148
13	12 16 26.06	2.0456	0 42 40.0	10.138
14	12 18 28.76	2.0443	0 52 48.0	10.128
15	12 20 31.38	2.0432	1 2 55.4	10.117
16	12 22 33.94	2.0421	1 13 2.1	10.106
17	12 24 36.43	2.0410	1 23 8.0	10.093
18	12 26 38.86	2.0399	1 33 13.2	10.079
19	12 28 41.22	2.0388	1 43 17.5	10.065
20	12 30 43.52	2.0378	1 53 20.9	10.050
21	12 32 45.76	2.0369	2 3 23.4	10.034
22	12 34 47.95	2.0360	2 13 24.9	10.017
23	12 36 50.08	2.0350	2 23 25.4	9.999
24	12 38 52.15	2.0341	S. 2 33 24.9	9.981

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 17.					**FRIDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 38 52.15	2.0341	S. 2 33 24.9	9.981	0	14 16 3.39	2.0250	S. 9 57 46.7	8.274
1	12 40 54.17	2.0333	2 43 23.2	9.962	1	14 18 4.90	2.0253	10 6 1.6	8.222
2	12 42 56.15	2.0326	2 53 20.4	9.942	2	14 20 6.43	2.0257	10 14 13.4	8.170
3	12 44 58.08	2.0318	3 3 16.3	9.922	3	14 22 7.98	2.0261	10 22 22.1	8.121
4	12 46 59.96	2.0309	3 13 11.0	9.901	4	14 24 9.56	2.0265	10 30 27.6	8.065
5	12 49 1.79	2.0302	3 23 4.4	9.879	5	14 26 11.16	2.0269	10 38 29.9	8.011
6	12 51 3.59	2.0296	3 32 56.4	9.856	6	14 28 12.79	2.0273	10 46 28.9	7.957
7	12 53 5.35	2.0289	3 42 47.1	9.832	7	14 30 14.44	2.0277	10 54 24.7	7.903
8	12 55 7.06	2.0283	3 52 36.3	9.808	8	14 32 16.12	2.0282	11 2 17.2	7.847
9	12 57 8.74	2.0277	4 2 24.1	9.783	9	14 34 17.83	2.0287	11 10 6.4	7.792
10	12 59 10.39	2.0272	4 12 10.3	9.758	10	14 36 19.56	2.0291	11 17 52.2	7.735
11	13 1 12.01	2.0267	4 21 55.0	9.731	11	14 38 21.32	2.0297	11 25 34.6	7.678
12	13 3 13.59	2.0261	4 31 38.1	9.704	12	14 40 23.12	2.0302	11 33 13.6	7.621
13	13 5 15.14	2.0257	4 41 19.5	9.676	13	14 42 24.95	2.0307	11 40 49.1	7.563
14	13 7 16.67	2.0253	4 50 59.2	9.647	14	14 44 26.80	2.0312	11 48 21.1	7.504
15	13 9 18.17	2.0248	5 0 37.2	9.618	15	14 46 28.69	2.0317	11 55 49.6	7.445
16	13 11 19.65	2.0244	5 10 13.4	9.588	16	14 48 30.61	2.0322	12 3 14.5	7.386
17	13 13 21.10	2.0240	5 19 47.7	9.557	17	14 50 32.56	2.0328	12 10 35.9	7.326
18	13 15 22.53	2.0237	5 29 20.2	9.526	18	14 52 34.55	2.0334	12 17 53.6	7.266
19	13 17 23.94	2.0234	5 38 50.8	9.494	19	14 54 36.57	2.0339	12 25 7.7	7.205
20	13 19 25.34	2.0232	5 48 19.4	9.461	20	14 56 38.62	2.0345	12 32 18.2	7.143
21	13 21 26.72	2.0229	5 57 46.1	9.427	21	14 58 40.71	2.0352	12 39 24.9	7.081
22	13 23 28.09	2.0227	6 7 10.7	9.393	22	15 0 42.84	2.0358	12 46 27.9	7.019
23	13 25 29.44	2.0225	S. 6 16 33.3	9.358	23	15 2 45.00	2.0364	S. 12 53 27.2	6.956
	THURSDAY 18.					**SATURDAY 20.**			
0	13 27 30.79	2.0223	S. 6 25 53.7	9.322	0	15 4 47.20	2.0370	S. 13 0 22.7	6.892
1	13 29 32.12	2.0222	6 35 12.0	9.286	1	15 6 49.44	2.0376	13 7 14.4	6.829
2	13 31 33.45	2.0221	6 44 28.1	9.249	2	15 8 51.71	2.0382	13 14 2.2	6.764
3	13 33 34.77	2.0220	6 53 41.9	9.212	3	15 10 54.02	2.0388	13 20 46.1	6.700
4	13 35 36.08	2.0219	7 2 53.5	9.173	4	15 12 56.36	2.0394	13 27 26.1	6.634
5	13 37 37.40	2.0218	7 12 2.7	9.135	5	15 14 58.74	2.0400	13 34 2.2	6.569
6	13 39 38.71	2.0217	7 21 9.6	9.095	6	15 17 1.16	2.0407	13 40 34.4	6.503
7	13 41 40.01	2.0217	7 30 14.1	9.055	7	15 19 3.63	2.0414	13 47 2.6	6.436
8	13 43 41.32	2.0218	7 39 16.1	9.014	8	15 21 6.13	2.0420	13 53 26.8	6.370
9	13 45 42.63	2.0219	7 48 15.7	8.972	9	15 23 8.67	2.0426	13 59 47.0	6.302
10	13 47 43.95	2.0220	7 57 12.8	8.930	10	15 25 11.24	2.0433	14 6 3.1	6.236
11	13 49 45.27	2.0220	8 6 7.3	8.887	11	15 27 13.86	2.0440	14 12 15.1	6.166
12	13 51 46.59	2.0221	8 14 59.2	8.843	12	15 29 16.52	2.0447	14 18 23.0	6.098
13	13 53 47.92	2.0222	8 23 48.5	8.799	13	15 31 19.22	2.0453	14 24 26.8	6.029
14	13 55 49.26	2.0224	8 32 35.1	8.754	14	15 33 21.95	2.0459	14 30 26.4	5.960
15	13 57 50.61	2.0226	8 41 19.0	8.709	15	15 35 24.73	2.0466	14 36 21.9	5.889
16	13 59 51.97	2.0228	8 50 0.2	8.663	16	15 37 27.54	2.0473	14 42 13.2	5.819
17	14 1 53.34	2.0230	8 58 38.6	8.616	17	15 39 30.40	2.0479	14 48 0.2	5.749
18	14 3 54.73	2.0232	9 7 14.2	8.569	18	15 41 33.29	2.0485	14 53 43.0	5.678
19	14 5 56.13	2.0235	9 15 46.9	8.522	19	15 43 36.22	2.0492	14 59 21.5	5.607
20	14 7 57.55	2.0238	9 24 16.8	8.473	20	15 45 39.20	2.0500	15 4 55.8	5.535
21	14 9 58.98	2.0240	9 32 43.7	8.424	21	15 47 42.22	2.0506	15 10 25.7	5.463
22	14 12 0.43	2.0243	9 41 7.7	8.375	22	15 49 45.27	2.0512	15 15 51.3	5.390
23	14 14 1.90	2.0247	9 49 28.7	8.324	23	15 51 48.36	2.0518	15 21 12.6	5.318
24	14 16 3.39	2.0250	S. 9 57 46.7	8.274	24	15 53 51.49	2.0525	S. 15 26 29.5	5.245

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 53 51.49	2.0525	S. 15 26 29.5	5.245
1	15 55 54.66	2.0532	15 31 42.0	5.171
2	15 57 57.87	2.0538	15 36 50.1	5.097
3	16 0 1.11	2.0544	15 41 53.7	5.023
4	16 2 4.40	2.0551	15 46 52.9	4.949
5	16 4 7.72	2.0557	15 51 47.6	4.874
6	16 6 11.08	2.0563	15 56 37.8	4.799
7	16 8 14.48	2.0569	16 1 23.5	4.724
8	16 10 17.91	2.0575	16 6 4.6	4.648
9	16 12 21.38	2.0582	16 10 41.2	4.572
10	16 14 24.89	2.0588	16 15 13.2	4.496
11	16 16 28.43	2.0593	16 19 40.7	4.419
12	16 18 32.01	2.0599	16 24 3.5	4.342
13	16 20 35.62	2.0606	16 28 21.7	4.265
14	16 22 39.27	2.0611	16 32 35.3	4.187
15	16 24 42.95	2.0617	16 36 44.2	4.109
16	16 26 46.67	2.0623	16 40 48.4	4.031
17	16 28 50.42	2.0628	16 44 47.9	3.953
18	16 30 54.20	2.0633	16 48 42.8	3.875
19	16 32 58.02	2.0638	16 52 32.9	3.796
20	16 35 1.86	2.0643	16 56 18.3	3.717
21	16 37 5.74	2.0649	16 59 59.0	3.638
22	16 39 9.65	2.0654	17 3 34.9	3.559
23	16 41 13.58	2.0659	S. 17 7 6.0	3.479

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 43 17.55	2.0664	S. 17 10 32.4	3.399
1	16 45 21.55	2.0668	17 13 54.0	3.319
2	16 47 25.57	2.0672	17 17 10.7	3.239
3	16 49 29.62	2.0677	17 20 22.6	3.158
4	16 51 33.70	2.0682	17 23 29.7	3.078
5	16 53 37.80	2.0686	17 26 31.9	2.997
6	16 55 41.93	2.0691	17 29 29.3	2.916
7	16 57 46.09	2.0695	17 32 21.8	2.835
8	16 59 50.27	2.0698	17 35 9.5	2.754
9	17 1 54.47	2.0702	17 37 52.3	2.672
10	17 3 58.69	2.0706	17 40 30.1	2.590
11	17 6 2.94	2.0710	17 43 3 1	2.509
12	17 8 7.21	2.0713	17 45 31.2	2.427
13	17 10 11.50	2.0717	17 47 54.4	2.345
14	17 12 15.81	2.0720	17 50 12.6	2.271
15	17 14 20.14	2.0723	17 52 25.9	2.180
16	17 16 24.49	2.0726	17 54 34.2	2.098
17	17 18 28.85	2.0728	17 56 37.6	2.015
18	17 20 33.23	2.0731	17 58 36.0	1.932
19	17 22 37.63	2.0734	18 0 29.5	1.850
20	17 24 42.04	2.0737	18 2 18.0	1.767
21	17 26 46.47	2.0740	18 4 1.5	1.684
22	17 28 50.92	2.0742	18 5 40.0	1.600
23	17 30 55.37	2.0744	18 7 13.5	1.517
24	17 32 59.84	2.0746	S. 18 8 42.0	1.434

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 32 59.84	2.0746	S. 18 8 42.0	1.434
1	17 35 4.32	2.0748	18 10 5.5	1.350
2	17 37 8.81	2.0749	18 11 24.0	1.267
3	17 39 13.31	2.0751	18 12 37.5	1.183
4	17 41 17.82	2.0752	18 13 46.0	1.099
5	17 43 22.34	2.0754	18 14 49.4	1.015
6	17 45 26.87	2.0756	18 15 47.8	0.932
7	17 47 31.41	2.0757	18 16 41.2	0.848
8	17 49 35.95	2.0757	18 17 29.6	0.764
9	17 51 40.49	2.0757	18 18 12.9	0.680
10	17 53 45.04	2.0758	18 18 51.2	0.596
11	17 55 49.59	2.0758	18 19 24.5	0.512
12	17 57 54.14	2.0759	18 19 52.7	0.428
13	17 59 58.70	2.0760	18 20 15.9	0.344
14	18 2 3.26	2.0759	18 20 34.0	0.260
15	18 4 7.81	2.0759	18 20 47.1	0.176
16	18 6 12.37	2.0760	18 20 55.1	0.092
17	18 8 16.93	2.0760	18 20 58.1	0.007 +
18	18 10 21.49	2.0759	18 20 56.0	0.077
19	18 12 26.04	2.0758	18 20 48.9	0.161
20	18 14 30.59	2.0758	18 20 36.7	0.245
21	18 16 35.14	2.0758	18 20 19.5	0.329
22	18 18 39.68	2.0757	18 19 57.2	0.413
23	18 20 44.22	2.0757	S. 18 19 29.9	0.497

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 22 48.76	2.0756	S. 18 18 57.5	0.581
1	18 24 53.29	2.0754	18 18 20.1	0.665
2	18 26 57.81	2.0752	18 17 37.7	0.749
3	18 29 2.32	2.0751	18 16 50.2	0.833
4	18 31 6.82	2.0750	18 15 57.7	0.916
5	18 33 11.32	2.0749	18 15 0.2	1.000
6	18 35 15.81	2.0747	18 13 57.7	1.084
7	18 37 20.28	2.0745	18 12 50.1	1.168
8	18 39 24.75	2.0743	18 11 37.5	1.252
9	18 41 29.20	2.0741	18 10 19.9	1.336
10	18 43 33.64	2.0739	18 8 57.3	1.419
11	18 45 38.07	2.0737	18 7 29.6	1.502
12	18 47 42.49	2.0735	18 5 57.0	1.586
13	18 49 46.89	2.0733	18 4 19.4	1.669
14	18 51 51.28	2.0731	18 2 36.7	1.752
15	18 53 55.66	2.0728	18 0 49.1	1.835
16	18 56 0.02	2.0726	17 58 56.5	1.918
17	18 58 4.37	2.0723	17 56 58.9	2.001
18	19 0 8.70	2.0720	17 54 56.4	2.083
19	19 2 13.01	2.0717	17 52 48.9	2.166
20	19 4 17.31	2.0715	17 50 36.5	2.248
21	19 6 21.59	2.0712	17 48 19.1	2.331
22	19 8 25.85	2.0709	17 45 56.8	2.413
23	19 10 30.09	2.0706	17 43 29.6	2.495
24	19 12 34.32	2.0703	S. 17 40 57.4	2.577

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 12 34.32	2.0703	S. 17 40 57.4	2.577
1	19 14 38.53	2.0700	17 38 20.3	2.659
2	19 16 42.72	2.0697	17 35 38.3	2.740
3	19 18 46.89	2.0693	17 32 51.4	2.822
4	19 20 51.04	2.0690	17 29 59.6	2.904
5	19 22 55.17	2.0687	17 27 3.0	2.985
6	19 24 59.29	2.0685	17 24 1.5	3.066
7	19 27 3.39	2.0682	17 20 55.1	3.147
8	19 29 7.47	2.0678	17 17 43.9	3.228
9	19 31 11.53	2.0674	17 14 27.8	3.308
10	19 33 15.56	2.0671	17 11 6.9	3.389
11	19 35 19.58	2.0668	17 7 41.2	3.469
12	19 37 23.58	2.0665	17 4 10.6	3.549
13	19 39 27.56	2.0662	17 0 35.2	3.629
14	19 41 31.52	2.0658	16 56 55.1	3.709
15	19 43 35.45	2.0654	16 53 10.2	3.789
16	19 45 39.37	2.0651	16 49 20.5	3.868
17	19 47 43.27	2.0648	16 45 26.0	3.947
18	19 49 47.15	2.0645	16 41 26.8	4.026
19	19 51 51.01	2.0642	16 37 22.9	4.105
20	19 53 54.85	2.0639	16 33 14.2	4.184
21	19 55 58.67	2.0635	16 29 0.8	4.262
22	19 58 2.47	2.0632	16 24 42.7	4.340
23	20 0 6.25	2.0629	S. 16 20 20.0	4.418

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 2 10.02	2.0626	S. 16 15 52.6	4.496
1	20 4 13.76	2.0623	16 11 20.5	4.573
2	20 6 17.49	2.0620	16 6 43.8	4.650
3	20 8 21.20	2.0617	16 2 2.5	4.727
4	20 10 24.90	2.0614	15 57 16.5	4.804
5	20 12 28.57	2.0611	15 52 25.9	4.881
6	20 14 32.23	2.0608	15 47 30.8	4.957
7	20 16 35.87	2.0606	15 42 31.1	5.033
8	20 18 39.50	2.0604	15 37 26.8	5.109
9	20 20 43.12	2.0602	15 32 18.0	5.184
10	20 22 46.72	2.0599	15 27 4.7	5.260
11	20 24 50.30	2.0596	15 21 46.9	5.335
12	20 26 53.87	2.0594	15 16 24.5	5.409
13	20 28 57.43	2.0592	15 10 57.7	5.484
14	20 31 0.97	2.0590	15 5 26.4	5.558
15	20 33 4.51	2.0588	14 59 50.7	5.632
16	20 35 8.03	2.0586	14 54 10.6	5.706
17	20 37 11.54	2.0585	14 48 26.1	5.779
18	20 39 15.05	2.0583	14 42 37.2	5.852
19	20 41 18.54	2.0582	14 36 43.9	5.924
20	20 43 22.03	2.0581	14 30 46.3	5.997
21	20 45 25.51	2.0580	14 24 44.3	6.069
22	20 47 28.98	2.0578	14 18 38.0	6.141
23	20 49 32.45	2.0577	14 12 27.4	6.212
24	20 51 35.91	2.0577	S. 14 6 12.5	6.284

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 51 35.91	2.0577	S. 14 6 12.5	6.284
1	20 53 39.37	2.0577	13 59 53.3	6.355
2	20 55 42.82	2.0577	13 53 29.9	6.425
3	20 57 46.28	2.0576	13 47 2.3	6.496
4	20 59 49.73	2.0576	13 40 30.4	6.565
5	21 1 53.18	2.0576	13 33 54.4	6.635
6	21 3 56.63	2.0576	13 27 14.2	6.704
7	21 6 0.09	2.0577	13 20 29.9	6.773
8	21 8 3.55	2.0577	13 13 41.4	6.842
9	21 10 7.01	2.0577	13 6 48.8	6.910
10	21 12 10.48	2.0578	12 59 52.2	6.978
11	21 14 13.95	2.0580	12 52 51.5	7.045
12	21 16 17.44	2.0582	12 45 46.8	7.112
13	21 18 20.93	2.0583	12 38 38.0	7.179
14	21 20 24.44	2.0585	12 31 25.2	7.246
15	21 22 27.95	2.0587	12 24 8.4	7.312
16	21 24 31.48	2.0590	12 16 47.7	7.378
17	21 26 35.03	2.0592	12 9 23.0	7.443
18	21 28 38.59	2.0595	12 1 54.4	7.508
19	21 30 42.17	2.0597	11 54 22.0	7.573
20	21 32 45.76	2.0600	11 46 45.7	7.637
21	21 34 49.37	2.0604	11 39 5.6	7.701
22	21 36 53.01	2.0608	11 31 21.6	7.764
23	21 38 56.67	2.0612	S. 11 23 33.9	7.827

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 41 0.35	2.0616	S. 11 15 42.4	7.889
1	21 43 4.06	2.0620	11 7 47.2	7.952
2	21 45 7.79	2.0625	10 59 48.2	8.013
3	21 47 11.56	2.0631	10 51 45.6	8.075
4	21 49 15.36	2.0636	10 43 39.3	8.136
5	21 51 19.19	2.0641	10 35 29.3	8.196
6	21 53 23.05	2.0646	10 27 15.8	8.256
7	21 55 26.94	2.0652	10 18 58.7	8.315
8	21 57 30.88	2.0659	10 10 38.0	8.374
9	21 59 34.85	2.0666	10 2 13.8	8.432
10	22 1 38.87	2.0673	9 53 46.1	8.490
11	22 3 42.93	2.0680	9 45 15.0	8.547
12	22 5 47.03	2.0687	9 36 40.4	8.604
13	22 7 51.18	2.0695	9 28 2.4	8.661
14	22 9 55.37	2.0703	9 19 21.1	8.717
15	22 11 59.62	2.0712	9 10 36.4	8.772
16	22 14 3.92	2.0721	9 1 48.4	8.827
17	22 16 8.27	2.0729	8 52 57.1	8.882
18	22 18 12.67	2.0738	8 44 2.6	8.936
19	22 20 17.13	2.0749	8 35 4.8	8.989
20	22 22 21.66	2.0760	8 26 3.9	9.042
21	22 24 26.25	2.0770	8 16 59.8	9.094
22	22 26 30.90	2.0780	8 7 52.6	9.146
23	22 28 35.61	2.0791	7 58 42.3	9.197
24	22 30 40.39	2.0802	S. 7 49 29.0	9.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 29.					TUESDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 30 40.39	2.0802	S. 7 49 29.0	9.247	0	23 21 0.87	2.1183	S. 3 54 28.4	10.273
1	22 32 45.24	2.0814	7 40 12.6	9.297	1	23 23 8.03	2.1204	3 44 11.0	10.307
2	22 34 50.16	2.0826	7 30 53.3	9.347	2	23 25 15.32	2.1226	3 33 51.6	10.340
3	22 36 55.15	2.0838	7 21 31.0	9.396	3	23 27 22.74	2.1248	3 23 30.2	10.372
4	22 39 0.22	2.0851	7 12 5.8	9.444	4	23 29 30.29	2.1270	3 13 6.9	10.404
5	22 41 5.37	2.0865	7 2 37.7	9.492	5	23 31 37.97	2.1292	3 2 41.7	10.435
6	22 43 10.60	2.0878	6 53 6.8	9.539	6	23 33 45.79	2.1314	2 52 14.7	10.465
7	22 45 15.91	2.0893	6 43 33.1	9.585	7	23 35 53.74	2.1337	2 41 45.9	10.494
8	22 47 21.31	2.0907	6 33 56.6	9.631	8	23 38 1.83	2.1360	2 31 15.4	10.522
9	22 49 26.80	2.0922	6 24 17.4	9.676	9	23 40 10.06	2.1384	2 20 43.3	10.549
10	22 51 32.37	2.0936	6 14 35.5	9.721	10	23 42 18.44	2.1409	2 10 9.5	10.576
11	22 53 38.03	2.0951	6 4 50.9	9.765	11	23 44 26.97	2.1433	1 59 34.2	10.602
12	22 55 43.78	2.0966	5 55 3.7	9.808	12	23 46 35.64	2.1458	1 48 57.4	10.626
13	22 57 49.62	2.0982	5 45 13.9	9.851	13	23 48 44.46	2.1484	1 38 19.1	10.650
14	22 59 55.56	2.0999	5 35 21.6	9.893	14	23 50 53.44	2.1510	1 27 39.3	10.674
15	23 2 1.61	2.1016	5 25 26.8	9.934	15	23 53 2.58	2.1536	1 16 58.2	10.696
16	23 4 7.75	2.1033	5 15 29.5	9.974	16	23 55 11.87	2.1563	1 6 15.8	10.717
17	23 6 14.00	2.1051	5 5 30.0	10.014	17	23 57 21.33	2.1590	0 55 32.1	10.738
18	23 8 20.36	2.1069	4 55 28.0	10.053	18	23 59 30.95	2.1617	0 44 47.3	10.757
19	23 10 26.83	2.1087	4 45 23.6	10.091	19	0 1 40.73	2.1644	0 34 1.3	10.776
20	23 12 33.40	2.1105	4 35 17.0	10.129	20	0 3 50.68	2.1673	0 23 14.3	10.792
21	23 14 40.09	2.1126	4 25 8.1	10.166	21	0 6 0.80	2.1702	0 12 26.2	10.809
22	23 16 46.90	2.1145	4 14 57.0	10.202	22	0 8 11.10	2.1731	S. 0 1 37.2	10.824
23	23 18 53.83	2.1164	4 4 43.7	10.238	23	0 10 21.57	2.1760	N. 0 9 12.7	10.839
24	23 21 0.87	2.1183	S. 3 54 28.4	10.273	24	0 12 32.22	2.1789	N. 0 20 3.4	10.852

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	4	10	4.0
☽ First Quarter, ...	11	3	9.1
○ Full Moon, ...	18	11	6.0
☾ Last Quarter, ...	26	14	0.9

	d	h
☾ Perigee, ...	7	13.3
☾ Apogee, ...	23	10.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Saturn	W.	94 59 45	2674	96 37 0	2658	98 14 36	2643	99 52 33	[illegible]
	Antares	W.	80 50 27	2749	82 26 2	2733	84 1 58	2716	85 38 16	2701
	Sun	E.	42 48 30	3034	41 19 0	3018	39 49 9	3001	38 18 57	2985
2	Antares	W.	93 45 3	2622	95 23 28	2607	97 2 13	2592	98 41 19	2577
	Sun	E.	30 42 48	2902	29 10 33	2887	27 37 57	2872	26 5 1	2856
6	Sun	W.	21 18 55	2524	22 59 35	2517	24 40 24	2512	26 21 21	2507
	Mars	E.	74 38 4	2356	72 53 25	2352	71 8 41	2348	69 23 52	2346
	Regulus	E.	110 44 3	2207	108 55 46	2203	107 7 23	2199	105 18 55	2196
7	Sun	W.	34 47 31	2492	36 28 55	2491	38 10 21	2490	39 51 48	2490
	Mars	E.	60 39 13	2343	58 54 16	2344	57 9 20	2346	55 24 28	2348
	Regulus	E.	96 15 29	2186	94 26 40	2186	92 37 51	2186	90 49 2	2186
8	Sun	W.	48 18 47	2497	50 0 4	2500	51 41 17	2503	53 22 25	2507
	Mars	E.	46 41 16	2371	44 57 0	2378	43 12 53	2385	41 28 57	2394
	Regulus	E.	81 45 15	2194	79 56 39	2196	78 8 6	2200	76 19 38	2204
9	Sun	W.	61 46 44	2530	63 27 16	2535	65 7 40	2541	66 47 55	2547
	Mars	E.	32 52 56	2455	31 10 40	2472	29 28 48	2492	27 47 24	2516
	Regulus	E.	67 18 48	2226	65 30 59	2231	63 43 17	2237	61 55 44	2243
	Spica	E.	120 47 29	2239	118 59 59	2244	117 12 36	2248	115 25 19	2253
10	Sun	W.	75 7 5	2580	76 46 26	2588	78 25 38	2596	80 4 39	2603
	Aldebaran	W.	27 9 44	2268	28 56 30	2275	30 43 6	2282	32 29 32	2289
	Regulus	E.	53 0 18	2275	51 13 42	2283	49 27 17	2290	47 41 3	2298
	Spica	E.	106 31 0	2283	104 44 35	2289	102 58 20	2296	101 12 14	2303
11	Sun	W.	88 17 6	2643	89 55 2	2652	91 32 47	2660	93 10 21	2668
	Aldebaran	W.	41 19 3	2326	43 4 24	2334	44 49 34	2342	46 34 33	2349
	Regulus	E.	38 52 44	2338	37 7 41	2347	35 22 50	2356	33 38 12	2366
	Spica	E.	92 24 23	2339	90 39 21	2347	88 54 31	2355	87 9 51	2363
12	Sun	W.	101 15 18	2712	102 51 43	2720	104 27 56	2729	106 3 57	2738
	Aldebaran	W.	55 16 37	2389	57 0 27	2397	58 44 6	2405	60 27 33	2413
	Spica	E.	78 29 27	2403	76 45 57	2412	75 2 39	2420	73 19 33	2429
	Saturn	E.	109 34 59	2374	107 50 47	2382	106 6 46	2390	104 22 56	2398
13	Sun	W.	114 1 4	2783	115 35 54	2792	117 10 33	2801	118 44 59	2810
	Aldebaran	W.	69 1 55	2455	70 44 12	2462	72 26 18	2471	74 8 12	2479
	Pollux	W.	27 30 19	2866	29 3 31	2828	30 37 24	2801	32 11 51	2779
	Mars	W.	23 17 28	2779	24 52 23	2769	26 27 32	2760	28 2 53	2753
	Spica	E.	64 47 3	2472	63 5 9	2480	61 23 28	2489	59 41 59	2497
	Saturn	E.	95 46 42	2438	94 4 2	2446	92 21 33	2455	90 39 16	2462
14	Sun	W.	126 34 13	2856	128 7 28	2866	129 40 31	2876	131 13 22	2885
	Aldebaran	W.	82 34 50	2520	84 15 35	2529	85 56 8	2537	87 36 30	2545
	Pollux	W.	40 9 34	2722	41 45 44	2718	43 22 0	2715	44 58 20	2713
	Mars	W.	36 1 10	2744	37 36 50	2747	39 12 27	2750	40 48 0	2754
	Spica	E.	51 17 42	2543	49 37 28	2553	47 57 28	2562	46 17 41	2572
	Saturn	E.	82 10 41	2504	80 29 33	2512	78 48 36	2520	77 7 51	2528
	Antares	E.	97 3 36	2583	95 24 17	2590	93 45 8	2598	92 6 10	2607
15	Aldebaran	W.	95 55 28	2587	97 34 41	2595	99 13 43	2604	100 52 33	2612

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Saturn	W.	101° 30′ 51″	2611	103° 9′ 31″	2596	104° 48′ 32″	2580	106° 27′ 54″	2564
	Antares	W.	87 14 55	2685	88 51 55	2669	90 29 17	2654	92 6 59	2638
	SUN	E.	36 48 25	2968	35 17 32	2951	33 46 18	2935	32 14 43	2919
2	Antares	W.	100 20 45	2563	102 0 31	2548	103 40 37	2535	105 21 2	2520
	SUN	E.	24 31 46	2842	22 58 13	2828	21 24 21	2814	19 50 10	2800
6	SUN	W.	28 2 25	2502	29 43 35	2499	31 24 50	2496	33 6 9	2494
	Mars	E	67 39 0	2344	65 54 5	2343	64 9 8	2342	62 24 11	2342
	Regulus	E.	103 30 21	2193	101 41 43	2190	99 53 1	2188	98 4 16	2187
7	SUN	W.	41 33 15	2491	43 14 41	2492	44 56 5	2493	46 37 27	2495
	Mars	E.	53 39 38	2351	51 54 53	2356	50 10 14	2360	48 25 41	2366
	Regulus	E.	89 0 13	2186	87 11 25	2188	85 22 39	2189	83 33 56	2192
8	SUN	W.	55 3 29	2511	56 44 27	2515	58 25 19	2520	60 6 5	2526
	Mars	E.	39 45 14	2404	38 1 45	2415	36 18 31	2426	34 35 34	2440
	Regulus	E.	74 31 16	2207	72 42 59	2212	70 54 49	2216	69 6 45	2220
9	SUN	W.	68 28 3	2553	70 8 2	2560	71 47 52	2566	73 27 33	2573
	Mars	E.	26 6 33	2544	24 26 21	2582	22 47 1	2625	21 8 40	2675
	Regulus	E.	60 8 20	2249	58 21 5	2256	56 34 0	2262	54 47 4	2268
	Spica	E.	113 38 11	2258	111 51 10	2264	110 4 18	2270	108 17 34	2276
10	SUN	W.	81 43 30	2613	83 22 10	2620	85 0 40	2626	86 38 58	2635
	Aldebaran	W.	34 15 47	2296	36 1 52	2304	37 47 46	2311	39 33 30	2318
	Regulus	E.	45 55 0	2305	44 9 9	2313	42 23 29	2322	40 38 0	2330
	Spica	E.	99 26 19	2310	97 40 34	2317	95 55 0	2324	94 9 36	2332
11	SUN	W.	94 47 44	2676	96 24 56	2686	98 1 55	2695	99 38 42	2704
	Aldebaran	W.	48 19 21	2357	50 3 57	2365	51 48 22	2373	53 32 35	2381
	Regulus	E.	31 53 47	2375	30 9 37	2385	28 25 41	2395	26 42 0	2405
	Spica	E.	85 25 23	2371	83 41 7	2379	81 57 2	2387	80 13 8	2396
12	SUN	W.	107 39 46	2747	109 15 23	2756	110 50 49	2765	112 26 2	2774
	Aldebaran	W.	62 10 49	2422	63 53 53	2429	65 36 45	2438	67 19 26	2446
	Spica	E.	71 36 39	2437	69 53 57	2445	68 11 27	2454	66 29 9	2463
	Saturn	E.	102 39 19	2406	100 55 52	2414	99 12 37	2422	97 29 34	2430
13	SUN	W.	120 19 14	2819	121 53 17	2828	123 27 7	2838	125 0 46	2847
	Aldebaran	W.	75 49 55	2487	77 31 26	2496	79 12 45	2504	80 53 53	2512
	Pollux	W.	33 46 46	2762	35 22 4	2748	36 57 40	2737	38 33 31	2729
	Mars	W.	29 38 25	2747	31 14 3	2744	32 49 44	2743	34 25 27	2743
	Spica	E.	58 0 43	2507	56 19 38	2516	54 38 47	2525	52 58 8	2534
	Saturn	E.	88 57 10	2471	87 15 16	2479	85 33 33	2487	83 52 1	2495
14	SUN	W.	132 46 1	2894	134 18 27	2904	135 50 42	2913	137 22 43	2924
	Aldebaran	W.	89 16 40	2553	90 56 40	2561	92 36 27	2570	94 16 4	2578
	Pollux	W.	46 34 43	2712	48 11 7	2713	49 47 30	2713	51 23 52	2715
	Mars	W.	42 23 27	2759	43 58 49	2764	45 34 4	2769	47 9 12	2775
	Spica	E.	44 38 8	2583	42 58 48	2593	41 19 43	2603	39 40 52	2614
	Saturn	E.	75 27 17	2536	73 46 55	2545	72 6 44	2553	70 26 44	2561
	Antares	E.	90 27 24	2615	88 48 49	2623	87 10 25	2631	85 32 12	2640
15	Aldebaran	W.	102 31 12	2621	104 9 39	2629	105 47 54	2638	107 25 58	2646

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Pollux W.	53° 0′ 12″	2718	54° 36′ 29″	2721	56° 12′ 41″	2725	57° 48′ 48″	2729
	Mars W.	48 44 13	2781	50 19 6	2788	51 53 50	2794	53 28 26	2801
	Spica E.	38 2 15	2624	36 23 53	2636	34 45 46	2648	33 7 56	2660
	Saturn E.	68 46 56	2569	67 7 19	2578	65 27 54	2587	63 48 41	2595
	Antares E.	83 54 11	2649	82 16 22	2657	80 38 45	2666	79 1 20	2676
16	Aldebaran W.	109 3 51	2655	110 41 31	2663	112 19 0	2672	114 56 18	2681
	Pollux W.	65 47 52	2755	67 23 18	2761	68 58 37	2768	70 33 47	2775
	Mars W.	61 19 4	2838	62 52 42	2846	64 26 11	2854	65 59 28	2862
	Regulus W.	29 3 42	2674	30 40 57	2681	32 18 3	2688	33 54 59	2695
	Saturn E.	55 35 28	2638	53 57 25	2646	52 19 33	2655	50 41 53	2664
	Antares E.	70 57 23	2724	69 21 14	2734	67 45 19	2744	66 9 40	2754
17	Pollux W.	78 27 19	2811	80 1 32	2820	81 35 34	2828	83 9 26	2836
	Mars W.	73 43 17	2905	75 15 30	2913	76 47 32	2923	78 19 23	2931
	Regulus W.	41 57 9	2735	43 33 3	2743	45 8 46	2751	46 44 18	2760
	Saturn E.	42 36 33	2709	41 0 5	2718	39 23 49	2727	37 47 45	2737
	Antares E.	58 14 44	2810	56 40 29	2822	55 6 30	2835	53 32 47	2848
	α Aquilæ E.	106 33 7	3193	105 6 50	3195	103 40 36	3198	102 14 24	3202
18	Pollux W.	90 56 0	2880	92 28 45	2889	94 1 18	2898	95 33 39	2906
	Mars W.	85 55 45	2977	87 26 26	2986	88 56 56	2996	90 27 15	3005
	Regulus W.	54 39 10	2801	56 13 35	2811	57 47 48	2820	59 21 50	2828
	Antares E.	45 48 31	2919	44 16 36	2935	42 45 1	2951	41 13 47	2968
	α Aquilæ E.	95 4 47	3230	93 39 13	3237	92 13 48	3246	90 48 33	3254
19	Pollux W.	103 12 25	2956	104 43 33	2965	106 14 29	2976	107 45 12	2986
	Mars W.	97 55 54	3052	99 25 3	3060	100 54 1	3070	102 22 48	3079
	Regulus W.	67 9 11	2873	68 42 5	2880	70 14 49	2889	71 47 21	2896
	Antares E.	33 43 43	3078	32 15 7	3105	30 47 4	3136	29 19 38	3169
	α Aquilæ E.	83 44 58	3306	82 20 53	3317	80 57 1	3330	79 33 24	3343
	Jupiter E.	115 42 25	2935	114 10 50	2943	112 39 26	2952	111 8 14	2961
	Fomalhaut E.	116 16 2	3313	114 52 6	3312	113 28 8	3310	112 4 8	3309
20	Regulus W.	79 27 24	2939	80 58 53	2947	82 30 12	2955	84 1 22	2964
	Spica W.	26 11 40	3001	27 41 52	3003	29 12 0	3006	30 42 5	3009
	α Aquilæ E.	72 39 20	3418	71 17 23	3434	69 55 46	3452	68 34 28	3471
	Jupiter E.	103 34 51	3002	102 4 41	3010	100 34 41	3018	99 4 51	3026
	Fomalhaut E.	105 4 13	3316	103 40 20	3319	102 16 30	3323	100 52 45	3326
21	Regulus W.	91 34 48	2999	93 5 3	3006	94 35 9	3012	96 5 7	3018
	Spica W.	38 11 27	3028	39 41 5	3033	41 10 37	3038	42 40 2	3043
	α Aquilæ E.	61 53 24	3576	60 34 23	3599	59 15 48	3625	57 57 41	3652
	Jupiter E.	91 37 58	3062	90 9 1	3069	88 40 13	3076	87 11 33	3083
	Fomalhaut E.	93 55 13	3351	92 32 0	3357	91 8 54	3363	89 45 56	3369
	Venus E.	111 49 7	3439	110 27 35	3446	109 6 11	3454	107 44 55	3461
22	Spica W.	50 5 48	3064	51 34 42	3067	53 3 31	3071	54 32 16	3073
	Saturn W.	19 32 21	3039	21 1 46	3041	22 31 8	3043	24 0 28	3045
	α Aquilæ E.	51 34 54	3814	50 20 5	3853	49 5 57	3894	47 52 31	3939
	Jupiter E.	79 50 1	3109	78 22 2	3114	76 54 9	3118	75 26 20	3122
	Fomalhaut E.	82 52 53	3404	81 30 40	3411	80 8 36	3419	78 46 41	3426
	α Pegasi E.	97 41 12	3294	96 16 54	3298	94 52 40	3300	93 28 29	3304
	Venus E.	101 0 25	3491	99 39 50	3496	98 19 22	3501	96 58 58	3506
	Sun E.	139 58 23	3426	138 36 36	3430	137 14 53	3433	135 53 14	3436

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Pollux	W.	59° 24′ 50″	2733	61° 0′ 46″	2738	62° 36′ 35″	2744	64° 12′ 17″	2749
	Mars	W.	55 2 53	2808	56 37 10	2815	58 11 18	2823	59 45 16	2831
	Spica	E.	31 30 23	2674	29 53 7	2688	28 16 11	2703	26 39 35	2719
	Saturn	E.	62 9 39	2604	60 30 49	2612	58 52 10	2621	57 13 43	2629
	Antares	E.	77 24 7	2685	75 47 7	2696	74 10 20	2704	72 33 45	2713
16	Aldebaran	W.	115 33 24	2689	117 10 18	2698	118 47 0	2707	120 23 31	2716
	Pollux	W.	72 8 48	2782	73 43 40	2789	75 18 23	2796	76 52 56	2804
	Mars	W.	67 32 35	2870	69 5 32	2879	70 38 18	2887	72 10 53	2895
	Regulus	W.	35 31 46	2703	37 8 22	2710	38 44 48	2719	40 21 4	2726
	Saturn	E.	49 4 25	2673	47 27 9	2682	45 50 5	2691	44 13 13	2700
	Antares	E.	64 34 10	2765	62 58 56	2776	61 23 57	2788	59 49 13	2799
17	Pollux	W.	84 43 7	2845	86 16 37	2853	87 49 56	2862	89 23 4	2871
	Mars	W.	79 51 2	2940	81 22 30	2949	82 53 47	2958	84 24 52	2968
	Regulus	W.	48 19 39	2768	49 54 49	2777	51 29 47	2785	53 4 35	2794
	Saturn	E.	36 11 54	2746	34 36 15	2756	33 0 49	2766	31 25 36	2775
	Antares	E.	51 59 21	2861	50 26 11	2874	48 53 20	2889	47 20 46	2903
	a Aquilæ	E.	100 48 17	3206	99 22 15	3211	97 56 19	3216	96 30 29	3223
18	Pollux	W.	97 5 48	2917	98 37 46	2927	100 9 31	2936	101 41 4	2946
	Mars	W.	91 57 22	3014	93 27 17	3023	94 57 1	3033	96 26 33	3042
	Regulus	W.	60 55 41	2838	62 29 20	2846	64 2 48	2855	65 36 5	2863
	Antares	E.	39 42 56	2988	38 12 28	3008	36 42 25	3030	35 12 50	3053
	a Aquilæ	E.	89 23 27	3263	87 58 33	3272	86 33 49	3282	85 9 17	3294
19	Pollux	W.	109 15 42	2997	110 45 59	3007	112 16 3	3018	113 45 54	3028
	Mars	W.	103 51 23	3088	105 19 47	3098	106 47 59	3107	108 16 0	3116
	Regulus	W.	73 19 43	2906	74 51 54	2915	76 23 54	2923	77 55 44	2931
	Antares	E.	27 52 53	3208	26 26 54	3253	25 1 47	3303	23 37 38	3360
	a Aquilæ	E.	78 10 2	3357	76 46 56	3372	75 24 7	3386	74 1 34	3401
	Jupiter	E.	109 37 12	2969	108 6 21	2978	106 35 41	2986	105 5 11	2994
	Fomalhaut	E.	110 40 7	3309	109 16 6	3310	107 52 6	3312	106 28 8	3313
20	Regulus	W.	85 32 22	2970	87 3 12	2977	88 33 53	2985	90 4 25	2993
	Spica	W.	32 12 6	3013	33 42 3	3016	35 11 56	3020	36 41 44	3024
	a Aquilæ	E.	67 13 30	3489	65 52 54	3509	64 32 41	3531	63 12 51	3553
	Jupiter	E.	97 35 10	3034	96 5 38	3041	94 36 16	3047	93 7 3	3055
	Fomalhaut	E.	99 29 4	3331	98 5 28	3336	96 41 57	3340	95 18 32	3345
21	Regulus	W.	97 34 57	3024	99 4 40	3030	100 34 16	3035	102 3 45	3040
	Spica	W.	44 9 22	3047	45 38 36	3052	47 7 45	3056	48 36 49	3060
	a Aquilæ	E	56 40 3	3681	55 22 56	3711	54 6 20	3744	52 50 19	3778
	Jupiter	E.	85 43 0	3087	84 14 35	3093	82 46 17	3099	81 18 6	3104
	Fomalhaut	E.	88 23 4	3376	87 0 19	3382	85 37 43	3389	84 15 14	3396
	Venus	E.	106 23 47	3467	105 2 46	3473	103 41 52	3480	102 21 5	3486
22	Spica	W.	56 0 58	3078	57 29 36	3080	58 58 10	3082	60 26 41	3084
	Saturn	W.	25 29 45	3047	26 59 0	3048	28 28 13	3051	29 57 23	3052
	a Aquilæ	E.	46 39 51	3987	45 27 58	4040	44 16 58	4098	43 6 54	4160
	Jupiter	E.	73 58 37	3125	72 30 58	3129	71 3 23	3132	69 35 52	3134
	Fomalhaut	E	77 24 54	3434	76 3 16	3443	74 41 48	3451	73 20 29	3460
	a Pegasi	E.	92 4 21	3307	90 40 18	3310	89 16 18	3313	87 52 22	3317
	Venus	E.	95 38 40	3509	94 18 26	3513	92 58 16	3516	91 38 10	3519
	Sun	E	134 31 40	3441	133 10 10	3445	131 48 43	3447	130 27 20	3450

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Spica	W.	61° 55′ 10″	3087	63° 23′ 36″	3088	64° 52′ 0″	3089	66° 20′ 23″	3090
	Saturn	W.	31 26 31	3053	32 55 38	3055	34 24 43	3056	35 53 47	3056
	Jupiter	E.	68 8 25	3137	66 41 1	3139	65 13 38	3141	63 46 18	3141
	Fomalhaut	E.	71 59 19	3469	70 38 20	3478	69 17 31	3488	67 56 52	3497
	a Pegasi	E.	86 28 30	3320	85 4 41	3323	83 40 56	3326	82 17 15	3329
	Venus	E	90 18 7	3522	88 58 7	3525	87 38 10	3526	86 18 15	3527
	Sun	E.	129 6 0	3452	127 44 42	3454	126 23 26	3455	125 2 12	3456
24	Spica	W.	73 42 11	3089	75 10 34	3087	76 38 59	3086	78 7 26	3083
	Saturn	W.	43 19 4	3054	44 48 10	2052	46 17 17	3051	47 46 28	3048
	Antares	W.	29 6 37	3331	30 30 14	3308	31 54 17	3287	33 18 43	3266
	Jupiter	E.	56 29 51	3143	55 2 33	3142	53 35 14	3140	52 7 53	3138
	Fomalhaut	E.	61 16 38	3555	59 57 14	3568	58 38 4	3582	57 19 10	3596
	a Pegasi	E.	75 19 41	3344	73 56 20	3346	72 33 2	3350	71 9 48	3352
	Venus	E.	79 38 52	3527	78 18 58	3526	76 59 3	3525	75 39 6	3523
	Sun	E.	118 16 11	3455	116 54 57	3454	115 33 42	3453	114 12 25	3450
25	Spica	W.	85 30 34	3065	86 59 26	3060	88 28 24	3056	89 57 28	3050
	Saturn	W.	55 13 11	3030	56 42 47	2026	58 12 29	2021	59 42 16	3018
	Antares	W.	40 25 50	3194	41 52 6	3182	43 18 37	3169	44 45 23	3156
	Jupiter	E.	44 50 23	3122	43 22 41	3118	41 54 53	3113	40 26 59	3108
	Fomalhaut	E.	50 49 14	3693	49 32 19	3717	48 15 50	3744	46 59 48	3772
	a Pegasi	E.	64 14 27	3369	62 51 35	3372	61 28 47	3376	60 6 3	3380
	Venus	E.	68 58 33	3504	67 38 12	3498	66 17 46	3492	64 57 13	3486
	Sun	E.	107 25 4	3431	106 3 22	3426	104 41 35	3420	103 19 41	3414
26	Spica	W.	97 24 46	3014	98 54 41	2006	100 24 46	2997	101 55 1	2989
	Saturn	W.	67 13 14	2978	68 43 54	2970	70 14 45	2961	71 45 46	2961
	Antares	W.	52 2 52	3097	53 31 5	3085	54 59 34	3073	56 28 17	3060
	Jupiter	E.	33 5 44	3076	31 37 5	3069	30 8 17	3061	28 39 20	3054
	a Pegasi	E.	53 13 51	3412	51 51 48	3421	50 29 55	3431	49 8 14	3443
	Venus	E.	58 12 33	3447	56 51 10	3438	55 29 36	3428	54 7 51	3418
	Sun	E.	96 28 11	3375	95 5 25	3365	93 42 29	3356	92 19 22	3346
27	Saturn	W.	79 24 4	2898	80 56 26	2886	82 29 3	2873	84 1 55	2861
	Antares	W.	63 55 47	2998	65 26 7	2981	66 56 44	2967	68 27 38	2953
	a Pegasi	E.	42 23 44	3532	41 3 54	3559	39 44 35	3590	38 25 50	3627
	Venus	E.	47 15 58	3358	45 52 54	3345	44 29 35	3332	43 6 0	3318
	Sun	E.	85 20 41	3288	83 56 15	3275	82 31 35	3262	81 6 38	3248
28	Saturn	W.	91 50 35	2792	93 25 14	2776	95 0 13	2761	96 35 31	2746
	Antares	W.	76 6 46	2877	77 39 34	2862	79 12 42	2845	80 46 11	28.9
	a Aquilæ	W.	35 7 8	4464	36 11 33	4327	37 18 1	4202	38 26 25	4069
	Venus	E.	36 3 51	3241	34 38 30	3225	33 12 50	3208	31 46 49	3189
	Sun	E.	73 57 44	3173	72 31 3	3158	71 4 2	3141	69 36 42	3124
29	Saturn	W.	104 37 21	2664	106 14 49	2647	107 52 40	2630	109 30 54	2612
	Antares	W.	88 38 55	2747	90 14 33	2729	91 50 34	2711	93 26 59	2693
	a Aquilæ	W.	44 33 11	3652	45 50 49	3583	47 9 42	3518	48 29 46	3456
	Sun	E.	62 14 52	3037	60 45 25	3019	59 15 38	3001	57 45 24	2982
30	Antares	W.	101 34 49	2608	103 13 33	2591	104 52 40	2574	106 32 10	2557
	a Aquilæ	W.	55 25 51	3205	56 51 54	3163	58 18 47	3123	59 46 29	3083
	Sun	E.	50 8 38	2890	48 36 6	2872	47 3 11	2853	45 29 52	2835

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Spica	W.	67° 48′ 45″	3091	69° 17′ 6″	3091	70° 45′ 27″	3090	72° 13′ 48″	3090
	Saturn	W.	37 22 50	3066	38 51 53	3066	40 20 56	3066	41 50 0	3065
	Jupiter	E.	62 19 0	3142	60 51 42	3143	59 24 25	3143	57 57 8	3143
	Fomalhaut	E.	66 36 25	3508	65 16 10	3519	63 56 6	3530	62 36 15	3542
	a Pegasi	E.	80 53 38	3332	79 30 4	3335	78 6 33	3338	76 43 5	3341
	Venus	E.	84 58 21	3528	83 38 29	3529	82 18 37	3529	80 58 44	3528
	SUN	E.	123 40 59	3455	122 19 47	3455	120 58 35	3456	119 37 23	3456
24	Spica	W.	79 35 56	3081	81 4 29	3078	82 33 6	3074	84 1 47	3070
	Saturn	W.	49 15 41	3046	50 44 57	3042	52 14 17	3039	53 43 42	3034
	Antares	W.	34 43 32	3252	36 8 40	3236	37 34 6	3221	38 59 50	3206
	Jupiter	E.	50 40 30	3136	49 13 4	3133	47 45 34	3130	46 18 1	3126
	Fomalhaut	E.	56 0 33	3613	54 42 13	3631	53 24 13	3650	52 6 32	3671
	a Pegasi	E.	69 46 37	3356	68 23 29	3358	67 0 25	3361	65 37 24	3365
	Venus	E.	74 19 7	3520	72 59 4	3516	71 38 58	3512	70 18 48	3508
	SUN	E.	112 51 5	3447	111 29 42	3444	110 8 15	3440	108 46 44	3436
25	Spica	W.	91 26 39	3043	92 55 59	3037	94 25 26	3030	95 55 2	3023
	Saturn	W.	61 12 10	3008	62 42 13	3001	64 12 24	2994	65 42 44	2986
	Antares	W.	46 12 24	3145	47 39 39	3133	49 7 9	3121	50 34 53	3109
	Jupiter	E.	38 58 58	3102	37 30 51	3096	36 2 36	3090	34 34 14	3083
	Fomalhaut	E.	45 44 17	3808	44 29 19	3836	43 14 56	3876	42 1 12	3918
	a Pegasi	E.	58 43 24	3386	57 20 50	3391	55 58 23	3397	54 36 3	3404
	Venus	E.	63 36 33	3480	62 15 46	3472	60 54 51	3464	59 33 46	3456
	SUN	E.	101 57 39	3407	100 35 30	3400	99 13 13	3392	97 50 47	3383
26	Spica	W.	103 25 28	2979	104 56 7	2969	106 26 59	2959	107 58 3	2948
	Saturn	W.	73 17 0	2942	74 48 26	2931	76 20 5	2920	77 51 58	2909
	Antares	W.	57 57 15	3047	59 26 29	3034	60 55 59	3022	62 25 45	3009
	Jupiter	E.	27 10 14	3046	25 40 58	3038	24 11 33	3030	22 41 57	3022
	a Pegasi	E.	47 46 46	3455	46 25 32	3471	45 4 35	3488	43 43 58	3509
	Venus	E.	52 45 55	3407	51 23 46	3395	50 1 24	3383	48 38 48	3371
	SUN	E.	90 56 4	3335	89 32 33	3324	88 8 49	3313	86 44 52	3300
27	Saturn	W.	85 35 4	2848	87 8 30	2835	88 42 14	2821	90 16 15	2806
	Antares	W.	69 58 50	2938	71 30 21	2924	73 2 10	2909	74 34 18	2893
	a Pegasi	E.	37 7 45	3668	35 50 24	3718	34 33 56	3775	33 18 28	3840
	Venus	E.	41 42 9	3303	40 18 1	3288	38 53 36	3273	37 28 53	3257
	SUN	E.	79 41 26	3234	78 15 56	3220	76 50 10	3204	75 24 6	3189
28	Saturn	W.	98 11 10	2730	99 47 11	2713	101 23 32	2696	103 0 16	2681
	Antares	W.	82 20 1	2813	83 54 12	2797	85 28 44	2780	87 3 39	2763
	a Aquilæ	W.	39 36 37	3987	40 48 29	3893	42 1 56	3807	43 16 52	3727
	Venus	E.	30 20 28	3173	28 53 46	3155	27 26 43	3138	25 59 19	3119
	SUN	E.	68 9 2	3107	66 41 1	3090	65 12 39	3073	63 43 57	3055
29	Saturn	W.	111 9 32	2596	112 48 33	2577	114 27 59	2560	116 7 49	2543
	Antares	W.	95 3 47	2678	96 40 57	2660	98 18 31	2643	99 56 28	2626
	a Aquilæ	W.	49 50 57	3401	51 13 12	3348	52 36 27	3298	54 0 41	3250
	SUN	E.	56 14 49	2964	54 43 51	2946	53 12 30	2927	51 40 46	2909
30	Antares	W.	108 12 4	2541	109 52 20	2525	111 32 59	2508	113 14 1	2492
	a Aquilæ	W.	61 14 59	3047	62 44 14	3012	64 14 12	2978	65 44 52	2946
	SUN	E.	43 56 10	2818	42 22 4	2799	40 47 36	2782	39 12 44	2764

AT GREENWICH APPARENT NOON

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	2 32 47.68	9.539	N.15 1 6.0	45.50	15 54.20	66.04	2 58.84	0.317
Thur.	2	2 36 36.86	9.562	15 19 10.5	44.88	15 53.96	66.12	3 6.20	0.294
Fri.	3	2 40 26.60	9.585	15 37 0.0	44.24	15 53.73	66.20	3 13.00	0.271
Sat.	4	2 44 16.89	9.608	15 54 34.1	43.59	15 53.50	66.28	3 19.24	0.248
Sun.	5	2 48 7.73	9.631	16 11 52.3	42.93	15 53.27	66.36	3 24.94	0.225
Mon.	6	2 51 59.13	9.654	16 28 54.3	42.25	15 53.05	66.44	3 30.08	0.202
Tues.	7	2 55 51.08	9.677	16 45 39.9	41.56	15 52.83	66.52	3 34.67	0.179
Wed.	8	2 59 43.59	9.700	17 2 8.9	40.86	15 52.61	66.60	3 38.70	0.156
Thur.	9	3 3 36.66	9.723	17 18 21.0	40.14	15 52.40	66.68	3 42.18	0.133
Fri.	10	3 7 30.28	9.746	17 34 15.7	39.41	15 52.19	66.76	3 45.10	0.110
Sat.	11	3 11 24.46	9.770	17 49 52.5	38.67	15 51.98	66.84	3 47.47	0.087
Sun.	12	3 15 19.19	9.793	18 5 11.3	37.91	15 51.78	66.93	3 49.29	0.064
Mon.	13	3 19 14.49	9.816	18 20 12.0	37.15	15 51.58	67.02	3 50.55	0.041
Tues.	14	3 23 10.35	9.839	18 34 54.4	36.37	15 51.39	67.10	3 51.25	0.017
Wed.	15	3 27 6.77	9.862	18 49 18.0	35.58	15 51.19	67.18	3 51.39	0.007
Thur.	16	3 31 3.74	9.886	19 3 22.4	34.78	15 51.00	67.26	3 50.97	0.030
Fri.	17	3 35 1.28	9.909	19 17 7.3	33.97	15 50.81	67.34	3 50.00	0.053
Sat.	18	3 38 59.37	9.932	19 30 32.7	33.15	15 50.62	67.42	3 48.46	0.076
Sun.	19	3 42 58.01	9.955	19 43 38.3	32.32	15 50.43	67.50	3 46.37	0.099
Mon.	20	3 46 57.22	9.978	19 56 23.8	31.47	15 50.25	67.58	3 43.72	0.122
Tues.	21	3 50 56.99	10.001	20 8 48.9	30.61	15 50.07	67.66	3 40.51	0.145
Wed.	22	3 54 57.31	10.024	20 20 53.4	29.75	15 49.89	67.73	3 36.76	0.168
Thur.	23	3 58 58.17	10.047	20 32 37.2	28.88	15 49.71	67.81	3 32.47	0.190
Fri.	24	4 2 59.57	10.069	20 44 0.0	28.00	15 49.54	67.88	3 27.64	0.212
Sat.	25	4 7 1.50	10.091	20 55 1.4	27.11	15 49.37	67.95	3 22.27	0.234
Sun.	26	4 11 3.95	10.112	21 5 41.2	26.21	15 49.20	68.02	3 16.38	0.256
Mon.	27	4 15 6.92	10.133	21 15 59.2	25.30	15 49.04	68.09	3 9.99	0.276
Tues.	28	4 19 10.39	10.153	21 25 55.4	24.38	15 48.88	68.15	3 3.11	0.296
Wed.	29	4 23 14.34	10.173	21 35 29.6	23.45	15 48.73	68.21	2 55.74	0.316
Thur.	30	4 27 18.75	10.192	21 44 41.2	22.51	15 48.58	68.27	2 47.90	0.336
Fri.	31	4 31 23.62	10.211	21 53 30.1	21.56	15 48.43	68.33	2 39.62	0.354
Sat.	32	4 35 28.92	10.228	N.22 1 56.3	20.61	15 48.29	68.39	2 30.90	0.372

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	2 32 48.15	9.539	N.15 1 8.3	45.50	2 58.86	0.317	2 35 47.01
Thur.	2	2 36 37.35	9.562	15 19 12.8	44.88	3 6.22	0.294	2 39 43.57
Fri.	3	2 40 27.11	9.585	15 37 2.4	44.24	3 13.01	0.271	2 43 40.12
Sat.	4	2 44 17.42	9.608	15 54 36.6	43.59	3 19.25	0.248	2 47 36.67
Sun.	5	2 48 8.28	9.631	16 11 54.9	42.93	3 24.95	0.225	2 51 33.23
Mon.	6	2 51 59.69	9.654	16 28 56.8	42.25	3 30.09	0.202	2 55 29.78
Tues.	7	2 55 51.66	9.677	16 45 42.3	41.56	3 34.68	0.179	2 59 26.34
Wed.	8	2 59 44.18	9.700	17 2 11.3	40.86	3 38.71	0.156	3 3 22.89
Thur.	9	3 3 37.26	9.723	17 18 23.4	40.14	3 42.19	0.133	3 7 19.45
Fri.	10	3 7 30.89	9.746	17 34 18.1	39.41	3 45.11	0.110	3 11 16.00
Sat.	11	3 11 25.08	9.770	17 49 54.9	38.67	3 47.48	0.087	3 15 12.56
Sun.	12	3 15 19.82	9.793	18 5 13.7	37.91	3 49.29	0.064	3 19 9.11
Mon.	13	3 19 15.12	9.816	18 20 14.4	37.15	3 50.55	0.041	3 23 5.67
Tues.	14	3 23 10.98	9.839	18 34 56.7	36.37	3 51.24	0.017	3 27 2.22
Wed.	15	3 27 7.40	9.862	18 49 20.2	35.58	3 51.38	0.007	3 30 58.78
Thur.	16	3 31 4.37	9.886	19 3 24.6	34.78	3 50.96	0.030	3 34 55.33
Fri.	17	3 35 1.91	9.909	19 17 9.5	33.97	3 49.98	0.053	3 38 51.89
Sat.	18	3 39 0.00	9.932	19 30 34.8	33.15	3 48.44	0.076	3 42 48.44
Sun.	19	3 42 58.64	9.955	19 43 40.3	32.32	3 46.36	0.099	3 46 45.00
Mon.	20	3 46 57.84	9.978	19 56 25.8	31.47	3 43.71	0.122	3 50 41.55
Tues.	21	3 50 57.60	10.001	20 8 50.8	30.61	3 40.51	0.145	3 54 38.11
Wed.	22	3 54 57.91	10.024	20 20 55.2	29.75	3 36.75	0.168	3 58 34.66
Thur.	23	3 58 58.76	10.047	20 32 38.9	28.88	3 32.46	0.190	4 2 31.22
Fri.	24	4 3 0.15	10.069	20 44 1.6	28.00	3 27.63	0.212	4 6 27.78
Sat.	25	4 7 2.07	10.091	20 55 2.9	27.11	3 22.26	0.236	4 10 24.33
Sun.	26	4 11 4.51	10.112	21 5 42.6	26.21	3 16.38	0.256	4 14 20.89
Mon.	27	4 15 7.46	10.133	21 16 0.6	25.30	3 9.98	0.276	4 18 17.44
Tues.	28	4 19 10.91	10.153	21 25 56.7	24.38	3 3.09	0.296	4 22 14.00
Wed.	29	4 23 14.84	10.173	21 35 30.7	23.45	2 55.72	0.316	4 26 10.56
Thur.	30	4 27 19.23	10.192	21 44 42.2	22.51	2 47.88	0.336	4 30 7.11
Fri.	31	4 31 24.07	10.211	21 53 31.1	21.56	2 39.60	0.354	4 34 3.67
Sat.	32	4 35 29.35	10.228	N.22 1 57.3	20.61	2 30.88	0.372	4 38 0.23

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	121	40 37 44.3	37 31.7	145.50	+0.00	0.0035363	45.5	21 20 42.61
2	122	41 35 55.4	35 42.7	145.43	−0.12	.0036447	44.8	21 16 46.70
3	123	42 34 4.9	33 52.1	145.36	0.22	.0037515	44.1	21 12 50.79
4	124	43 32 12.6	31 59.7	145.29	0.31	.0038566	43.4	21 8 54.88
5	125	44 30 18.6	30 5.5	145.22	0.37	.0039599	42.7	21 4 58.97
6	126	45 28 22.8	28 9.6	145.14	0.39	.0040614	41.9	21 1 3.06
7	127	46 26 25.2	26 11.9	145.07	0.38	.0041611	41.2	20 57 7.15
8	128	47 24 25.8	24 12.4	144.99	0.35	.0042591	40.5	20 53 11.24
9	129	48 22 24.7	22 11.1	144.92	0.29	.0043555	39.8	20 49 15.33
10	130	49 20 21.7	20 7.9	144.84	0.20	.0044504	39.2	20 45 19.43
11	131	50 18 16.9	18 3.0	144.77	−0.08	.0045440	38.6	20 41 23.52
12	132	51 16 10.2	15 56.2	144.69	+0.04	.0046363	38.1	20 37 27.61
13	133	52 14 1.8	13 47.7	144.61	0.18	.0047271	37.6	20 33 31.70
14	134	53 11 51.7	11 37.5	144.54	0.31	.0048170	37.2	20 29 35.79
15	135	54 9 39.9	9 25.5	144.47	0.44	.0049057	36.8	20 25 39.88
16	136	55 7 26.5	7 12.0	144.41	0.56	.0049934	36.4	20 21 43.97
17	137	56 5 11.5	4 56.9	144.35	0.65	.0050802	36.0	20 17 48.06
18	138	57 2 55.0	2 40.3	144.29	0.73	.0051660	35.6	20 13 52.15
19	139	58 0 37.2	0 22.3	144.23	0.78	.0052509	35.2	20 9 56.25
20	140	58 58 18.1	58 3.0	144.18	0.80	.0053349	34.8	20 6 0.34
21	141	59 55 57.7	55 42.5	144.13	0.78	.0054179	34.4	20 2 4.43
22	142	60 53 36.3	53 21.0	144.08	0.73	.0054999	33.9	19 58 8.52
23	143	61 51 13.8	50 58.4	144.04	0.66	.0055807	33.4	19 54 12.61
24	144	62 48 50.3	48 34.7	144.00	0.57	.0056601	32.8	19 50 16.70
25	145	63 46 25.8	46 10.0	143.96	0.45	.0057381	32.1	19 46 20.79
26	146	64 44 0.5	43 44.6	143.93	0.32	.0058145	31.4	19 42 24.88
27	147	65 41 34.3	41 18.3	143.89	0.19	.0058890	30.6	19 38 28.96
28	148	66 39 7.2	38 51.0	143.85	+0.06	.0059617	29.8	19 34 33.05
29	149	67 36 39.3	36 22.9	143.81	−0.06	.0060325	29.0	19 30 37.14
30	150	68 34 10.5	33 53.9	143.77	0.17	.0061013	28.2	19 26 41.23
31	151	69 31 40.8	31 24.1	143.73	0.26	.0061677	27.2	19 22 45.32
32	152	70 29 10.3	28 53.5	143.70	−0.32	0.0062317	26.2	19 18 49.40

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 55.8	16 3.0	58 21.4	+2.21	58 47.6	+2.13	22 22.7	2.17	26.6
2	16 9.7	16 16.0	59 12.5	2.00	59 35.5	1.81	23 15.9	2.28	27.6
3	16 21.5	16 26.2	59 55.8	1.57	60 13.1	1.29			28.6
4	16 30.0	16 32.7	60 26.8	0.98	60 36.7	+0.65	0 11.9	2.39	0.2
5	16 34.3	16 34.7	60 42.5	+0.31	60 44.2	−0.03	1 10.6	2.48	1.2
6	16 34.1	16 32.4	60 41.8	−0.36	60 35.6	0.66	2 11.0	2.54	2.2
7	16 29.7	16 26.2	60 25.9	0.94	60 13.1	1.18	3 11.9	2.52	3.2
8	16 22.0	16 17.3	59 57.6	1.37	59 40.1	1.53	4 11.7	2.45	4.2
9	16 12.1	16 6.6	59 21.0	1.64	59 0.8	1.71	5 9.2	2.34	5.2
10	16 0.9	15 55.1	58 39.9	1.75	58 18.8	1.76	6 3.7	2.21	6.2
11	15 49.4	15 43.8	57 57.8	1.74	57 37.1	1.70	6 55.2	2.09	7.2
12	15 38.3	15 33.0	57 17.0	1.65	56 57.6	1.58	7 44.2	2.00	8.2
13	15 28.0	15 23.2	56 39.0	1.51	56 21.4	1.43	8 31.2	1.93	9.2
14	15 18.6	15 14.3	56 4.7	1.35	55 48.9	1.27	9 17.1	1.90	10.2
15	15 10.3	15 6.6	55 34.2	1.19	55 20.5	1.10	10 2.5	1.89	11.2
16	15 3.1	14 59.9	55 7.8	1.02	54 56.0	0.94	10 47.9	1.90	12.2
17	14 57.0	14 54.3	54 45.3	0.85	54 35.6	0.77	11 33.8	1.92	13.2
18	14 52.0	14 49.9	54 26.9	0.68	54 19.3	0.58	12 20.3	1.95	14.2
19	14 48.2	14 46.8	54 12.9	0.48	54 7.7	0.37	13 7.3	1.97	15.2
20	14 45.7	14 45.1	54 3.9	−0.26	54 1.5	−0.13	13 54.6	1.98	16.2
21	14 44.9	14 45.1	54 0.7	+0.01	54 1.7	+0.16	14 42.1	1.97	17.2
22	14 45.9	14 47.2	54 4.5	0.31	54 9.2	0.47	15 29.3	1.96	18.2
23	14 49.0	14 51.5	54 16.0	0.65	54 25.0	0.84	16 16.0	1.94	19.2
24	14 54.5	14 58.2	54 36.2	1.03	54 49.7	1.22	17 2.3	1.92	20.2
25	15 2.5	15 7.4	55 5.4	1.41	55 23.4	1.59	17 48.4	1.92	21.2
26	15 12.9	15 19.0	55 43.7	1.77	56 6.0	1.94	18 34.7	1.94	22.2
27	15 25.6	15 32.6	56 30.2	2.09	56 56.1	2.22	19 21.7	1.99	23.2
28	15 40.0	15 47.7	57 23.4	2.31	57 51.6	2.37	20 10.2	2.07	24.2
29	15 55.6	16 3.3	58 20.4	2.39	58 49.0	2.36	21 1.1	2.18	25.2
30	16 10.9	16 18.2	59 16.9	2.27	59 43.5	2.12	21 54.9	2.31	26.2
31	16 24.8	16 30.7	60 7.9	1.91	60 29.4	1.65	22 52.0	2.45	27.2
32	16 35.6	16 39.0	60 47.5	+1.34	61 1.6	+0.99	23 52.3	2.56	28.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 1.					**FRIDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 12 32.22	2.1789	N. 0 20 3.4	10.852	0	2 1 13.18	2.3603	N. 8 55 8.1	10.131
1	0 14 43.05	2.1820	0 30 54.8	10.866	1	2 3 34.93	2.3647	9 5 14.6	10.084
2	0 16 54.06	2.1851	0 41 47.1	10.878	2	2 5 56.94	2.3690	9 15 18.2	10.036
3	0 19 5.26	2.1882	0 52 40.1	10.888	3	2 8 19.21	2.3733	9 25 18.9	9.986
4	0 21 16.64	2.1913	1 3 33.6	10.897	4	2 10 41.73	2.3776	9 35 16.5	9.936
5	0 23 28.21	2.1944	1 14 27.7	10.905	5	2 13 4.51	2.3819	9 45 11.0	9.882
6	0 25 39.97	2.1976	1 25 22.2	10.912	6	2 15 27.56	2.3862	9 55 2.3	9.828
7	0 27 51.93	2.2009	1 36 17.1	10.918	7	2 17 50.86	2.3906	10 4 50.3	9.773
8	0 30 4.08	2.2041	1 47 12.4	10.924	8	2 20 14.43	2.3949	10 14 35.0	9.716
9	0 32 16.43	2.2074	1 58 7.9	10.928	9	2 22 38.25	2.3993	10 24 16.2	9.658
10	0 34 28.97	2.2108	2 9 3.7	10.931	10	2 25 2.34	2.4036	10 33 53.9	9.598
11	0 36 41.72	2.2142	2 19 59.6	10.933	11	2 27 26.69	2.4079	10 43 27.9	9.536
12	0 38 54.67	2.2177	2 30 55.6	10.933	12	2 29 51.29	2.4122	10 52 58.2	9.473
13	0 41 7.83	2.2212	2 41 51.6	10.933	13	2 32 16.15	2.4165	11 2 24.7	9.409
14	0 43 21.21	2.2247	2 52 47.5	10.931	14	2 34 41.27	2.4208	11 11 47.3	9.344
15	0 45 34.79	2.2282	3 3 43.3	10.928	15	2 37 6.65	2.4251	11 21 6.0	9.277
16	0 47 48.59	2.2318	3 14 38.9	10.924	16	2 39 32.28	2.4294	11 30 20.6	9.208
17	0 50 2.61	2.2354	3 25 34.2	10.919	17	2 41 58.17	2.4336	11 39 31.0	9.138
18	0 52 16.84	2.2390	3 36 29.2	10.913	18	2 44 24.31	2.4379	11 48 37.2	9.067
19	0 54 31.29	2.2427	3 47 23.8	10.906	19	2 46 50.71	2.4421	11 57 39.1	8.996
20	0 56 45.96	2.2464	3 58 17.9	10.898	20	2 49 17.36	2.4463	12 6 36.6	8.921
21	0 59 0.85	2.2501	4 9 11.5	10.888	21	2 51 44.26	2.4505	12 15 29.6	8.846
22	1 1 15.97	2.2539	4 20 4.2	10.876	22	2 54 11.42	2.4547	12 24 18.0	8.768
23	1 3 31.32	2.2577	N. 4 30 56.5	10.863	23	2 56 38.82	2.4588	N.12 23 1.8	8.690
	THURSDAY 2.					**SATURDAY 4.**			
0	1 5 46.89	2.2615	N. 4 41 48.0	10.850	0	2 59 6.47	2.4629	N.12 41 40.8	8.611
1	1 8 2.69	2.2653	4 52 38.6	10.836	1	3 1 34.37	2.4670	12 50 15.1	8.531
2	1 10 18.73	2.2692	5 3 28.3	10.820	2	3 4 2.51	2.4710	12 58 44.5	8.449
3	1 12 35.00	2.2731	5 14 16.9	10.802	3	3 6 30.89	2.4750	13 7 8.9	8.366
4	1 14 51.50	2.2770	5 25 4.5	10.783	4	3 8 59.51	2.4790	13 15 28.3	8.281
5	1 17 8.24	2.2810	5 35 50.9	10.763	5	3 11 28.37	2.4830	13 23 42.6	8.196
6	1 19 25.22	2.2850	5 46 36.1	10.742	6	3 13 57.47	2.4869	13 31 51.7	8.107
7	1 21 42.44	2.2890	5 57 20.0	10.720	7	3 16 26.80	2.4908	13 39 55.5	8.018
8	1 23 59.90	2.2931	6 8 2.5	10.696	8	3 18 56.36	2.4947	13 47 53.9	7.928
9	1 26 17.61	2.2972	6 18 43.5	10.671	9	3 21 26.16	2.4985	13 55 46.9	7.837
10	1 28 35.56	2.3012	6 29 23.0	10.645	10	3 23 56.18	2.5022	14 3 34.3	7.744
11	1 30 53.76	2.3053	6 40 0.9	10.618	11	3 26 26.42	2.5059	14 11 16.1	7.650
12	1 33 12.20	2.3094	6 50 37.1	10.589	12	3 28 56.89	2.5096	14 18 52.3	7.556
13	1 35 30.89	2.3136	7 1 11.5	10.558	13	3 31 27.58	2.5133	14 26 22.7	7.460
14	1 37 49.83	2.3177	7 11 44.0	10.526	14	3 33 58.48	2.5168	14 33 47.3	7.363
15	1 40 9.02	2.3219	7 22 14.6	10.493	15	3 36 29.59	2.5203	14 41 5.9	7.261
16	1 42 28.46	2.3261	7 32 43.1	10.458	16	3 39 0.92	2.5238	14 48 18.6	7.161
17	1 44 48.16	2.3304	7 43 9.5	10.422	17	3 41 32.45	2.5273	14 55 25.2	7.059
18	1 47 8.11	2.3346	7 53 33.7	10.385	18	3 44 4.19	2.5306	15 2 25.7	6.957
19	1 49 28.31	2.3388	8 3 55.6	10.346	19	3 46 36.13	2.5339	15 9 20.0	6.853
20	1 51 48.77	2.3431	8 14 15.2	10.306	20	3 49 8.26	2.5372	15 16 8.0	6.748
21	1 54 9.49	2.3474	8 24 32.3	10.264	21	3 51 40.59	2.5403	15 22 49.6	6.641
22	1 56 30.46	2.3517	8 34 46.9	10.221	22	3 54 13.10	2.5435	15 29 24.9	6.534
23	1 58 51.69	2.3560	8 44 58.8	10.177	23	3 56 45.80	2.5466	15 35 53.7	6.426
24	2 1 13.18	2.3603	N. 8 55 8.1	10.131	24	3 59 18.69	2.5496	N.15 42 16.0	6.317

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 59 18.69	2.5498	N.15 42 16.0	6.317
1	4 1 51.75	2.5525	15 48 31.7	6.206
2	4 4 24.99	2.5554	15 54 40.7	6.096
3	4 6 58.40	2.5582	16 0 43.1	5.983
4	4 9 31.97	2.5609	16 6 38.7	5.870
5	4 12 5.71	2.5636	16 12 27.5	5.756
6	4 14 39.60	2.5662	16 18 9.4	5.641
7	4 17 13.64	2.5686	16 23 44.4	5.526
8	4 19 47.83	2.5710	16 29 12.5	5.410
9	4 22 22.16	2.5733	16 34 33.5	5.292
10	4 24 56.63	2.5756	16 39 47.5	5.173
11	4 27 31.23	2.5778	16 44 54.3	5.053
12	4 30 5.97	2.5799	16 49 54.0	4.932
13	4 32 40.83	2.5820	16 54 46.3	4.811
14	4 35 15.81	2.5839	16 59 31.3	4.689
15	4 37 50.90	2.5858	17 4 9.0	4.567
16	4 40 26.10	2.5875	17 8 39.3	4.443
17	4 43 1.40	2.5892	17 13 2.2	4.319
18	4 45 36.80	2.5908	17 17 17.6	4.194
19	4 48 12.29	2.5923	17 21 25.5	4.069
20	4 50 47.87	2.5937	17 25 25.9	3.943
21	4 53 23.53	2.5949	17 29 18.7	3.817
22	4 55 59.26	2.5961	17 33 3.9	3.690
23	4 58 35.06	2.5972	N.17 36 41.4	3.562

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 1 10.92	2.5982	N.17 40 11.3	3.434
1	5 3 46.84	2.5992	17 43 33.4	3.305
2	5 6 22.82	2.6001	17 46 47.9	3.176
3	5 8 58.84	2.6008	17 49 54.6	3.047
4	5 11 34.91	2.6014	17 52 53.5	2.917
5	5 14 11.01	2.6018	17 55 44.6	2.787
6	5 16 47.13	2.6023	17 58 27.9	2.656
7	5 19 23.28	2.6027	18 1 3.3	2.524
8	5 21 59.45	2.6029	18 3 30.8	2.393
9	5 24 35.63	2.6030	18 5 50.4	2.262
10	5 27 11.81	2.6030	18 8 2.2	2.130
11	5 29 47.99	2.6030	18 10 6.1	1.998
12	5 32 24.17	2.6029	18 12 2.0	1.866
13	5 35 0.34	2.6028	18 13 50.0	1.734
14	5 37 36.50	2.6025	18 15 30.1	1.602
15	5 40 12.64	2.6020	18 17 2.3	1.470
16	5 42 48.74	2.6014	18 18 26.5	1.338
17	5 45 24.80	2.6006	18 19 42.8	1.206
18	5 48 0.81	2.5997	18 20 51.1	1.073
19	5 50 36.77	2.5988	18 21 51.5	0.940
20	5 53 12.67	2.5978	18 22 43.9	0.808
21	5 55 48.51	2.5967	18 23 28.4	0.676
22	5 58 24.27	2.5955	18 24 5.0	0.544
23	6 0 59.96	2.5942	18 24 33.7	0.412
24	6 3 35.57	2.5930	N.18 24 54.4	0.280

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 3 35.57	2.5930	N.18 24 54.4	0.280
1	6 6 11.11	2.5917	18 25 7.2	0.148
2	6 8 46.57	2.5902	18 25 12.2	0.016
3	6 11 21.93	2.5885	18 25 9.2	0.115
4	6 13 57.19	2.5867	18 24 58.4	0.246
5	6 16 32.34	2.5849	18 24 39.7	0.377
6	6 19 7.38	2.5830	18 24 13.1	0.508
7	6 21 42.30	2.5810	18 23 38.8	0.638
8	6 24 17.10	2.5789	18 22 56.6	0.768
9	6 26 51.77	2.5768	18 22 6.7	0.897
10	6 29 26.31	2.5745	18 21 8.9	1.026
11	6 32 0.71	2.5721	18 20 3.5	1.154
12	6 34 34.96	2.5696	18 18 50.4	1.282
13	6 37 9.06	2.5671	18 17 29.7	1.409
14	6 39 43.01	2.5645	18 16 1.3	1.536
15	6 42 16.80	2.5618	18 14 25.3	1.662
16	6 44 50.42	2.5590	18 12 41.8	1.788
17	6 47 23.87	2.5561	18 10 50.7	1.914
18	6 49 57.15	2.5532	18 8 52.1	2.039
19	6 52 30.25	2.5502	18 6 46.1	2.163
20	6 55 3.17	2.5470	18 4 32.6	2.286
21	6 57 35.90	2.5438	18 2 11.7	2.409
22	7 0 8.43	2.5406	17 59 43.5	2.531
23	7 2 40.77	2.5372	N.17 57 8.0	2.653

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 5 12.90	2.5339	N.17 54 25.2	2.773
1	7 7 44.83	2.5304	17 51 35.2	2.893
2	7 10 16.55	2.5269	17 48 38.0	3.013
3	7 12 48.06	2.5233	17 45 33.6	3.132
4	7 15 19.35	2.5196	17 42 22.2	3.250
5	7 17 50.42	2.5159	17 39 3.7	3.367
6	7 20 21.26	2.5121	17 35 38.2	3.483
7	7 22 51.87	2.5083	17 32 5.7	3.598
8	7 25 22.26	2.5044	17 28 26.4	3.713
9	7 27 52.41	2.5005	17 24 40.2	3.827
10	7 30 22.32	2.4965	17 20 47.2	3.940
11	7 32 51.99	2.4924	17 16 47.5	4.051
12	7 35 21.41	2.4883	17 12 41.1	4.162
13	7 37 50.59	2.4842	17 8 28.0	4.273
14	7 40 19.51	2.4800	17 4 8.4	4.382
15	7 42 48.18	2.4757	16 59 42.3	4.489
16	7 45 16.59	2.4714	16 55 9.7	4.596
17	7 47 44.75	2.4671	16 50 30.7	4.703
18	7 50 12.64	2.4627	16 45 45.3	4.808
19	7 52 40.27	2.4583	16 40 53.7	4.912
20	7 55 7.63	2.4538	16 35 55.8	5.016
21	7 57 34.73	2.4493	16 30 51.7	5.119
22	8 0 1.55	2.4448	16 25 41.5	5.221
23	8 2 28.10	2.4403	16 20 25.3	5.321
24	8 4 54.38	2.4357	N.16 15 3.0	5.420

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 4 54.38	2.4357	N.16 15 3.0	5.420
1	8 7 20.38	2.4311	16 9 34.8	5.519
2	8 9 46.11	2.4265	16 4 0.7	5.616
3	8 12 11.56	2.4218	15 58 20.8	5.712
4	8 14 36.73	2.4171	15 52 35.2	5.807
5	8 17 1.62	2.4124	15 46 43.9	5.902
6	8 19 26.22	2.4077	15 40 47.0	5.995
7	8 21 50.54	2.4030	15 34 44.5	6.087
8	8 24 14.58	2.3982	15 28 36.5	6.178
9	8 26 38.33	2.3934	15 22 23.1	6.268
10	8 29 1.79	2.3887	15 16 4.3	6.356
11	8 31 24.97	2.3839	15 9 40.2	6.446
12	8 33 47.86	2.3791	15 3 10.8	6.533
13	8 36 10.46	2.3743	14 56 36.3	6.618
14	8 38 32.78	2.3695	14 49 56.6	6.702
15	8 40 54.81	2.3647	14 43 11.9	6.786
16	8 43 16.54	2.3599	14 36 22.3	6.869
17	8 45 37.99	2.3550	14 29 27.7	6.950
18	8 47 59.14	2.3501	14 22 28.3	7.030
19	8 50 20.01	2.3453	14 15 24.1	7.110
20	8 52 40.58	2.3405	14 8 15.1	7.189
21	8 55 0.87	2.3357	14 1 1.5	7.266
22	8 57 20.86	2.3309	13 53 43.3	7.342
23	8 59 40.56	2.3260	N.13 46 20.5	7.417

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 1 59.98	2.3212	N.13 38 53.3	7.491
1	9 4 19.11	2.3165	13 31 21.7	7.563
2	9 6 37.96	2.3117	13 23 45.7	7.634
3	9 8 56.52	2.3069	13 16 5.5	7.705
4	9 11 14.79	2.3021	13 8 21.1	7.775
5	9 13 32.78	2.2974	13 0 32.6	7.843
6	9 15 50.48	2.2926	12 52 40.0	7.910
7	9 18 7.90	2.2879	12 44 43.5	7.977
8	9 20 25.03	2.2832	12 36 43.0	8.042
9	9 22 41.88	2.2785	12 28 38.5	8.106
10	9 24 58.45	2.2739	12 20 30.3	8.168
11	9 27 14.74	2.2693	12 12 18.3	8.229
12	9 29 30.76	2.2647	12 4 2.6	8.291
13	9 31 46.50	2.2601	11 55 43.3	8.351
14	9 34 1.97	2.2555	11 47 20.5	8.410
15	9 36 17.16	2.2509	11 38 54.2	8.467
16	9 38 32.08	2.2464	11 30 24.5	8.524
17	9 40 46.73	2.2419	11 21 51.4	8.579
18	9 43 1.11	2.2375	11 13 15.0	8.634
19	9 45 15.23	2.2331	11 4 35.3	8.688
20	9 47 29.08	2.2287	10 55 52.5	8.741
21	9 49 42.67	2.2243	10 47 6.5	8.792
22	9 51 55.99	2.2199	10 38 17.5	8.842
23	9 54 9.05	2.2156	10 29 25.5	8.891
24	9 56 21.86	2.2113	N.10 20 30.6	8.940

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 56 21.86	2.2113	N.10 20 30.6	8.940
1	9 58 34.41	2.2070	10 11 32.8	8.987
2	10 0 46.70	2.2028	10 2 32.2	9.033
3	10 2 58.75	2.1987	9 53 28.8	9.078
4	10 5 10.54	2.1945	9 44 22.8	9.122
5	10 7 22.08	2.1903	9 35 14.2	9.165
6	10 9 33.38	2.1863	9 26 3.0	9.207
7	10 11 44.44	2.1823	9 16 49.3	9.249
8	10 13 55.25	2.1783	9 7 33.1	9.289
9	10 16 5.82	2.1743	8 58 14.6	9.329
10	10 18 16.16	2.1703	8 48 53.7	9.367
11	10 20 26.26	2.1664	8 39 30.6	9.404
12	10 22 36.13	2.1626	8 30 5.2	9.440
13	10 24 45.77	2.1588	8 20 37.7	9.476
14	10 26 55.18	2.1550	8 11 8.1	9.511
15	10 29 4.37	2.1513	8 1 36.4	9.544
16	10 31 13.34	2.1476	7 52 2.8	9.576
17	10 33 22.08	2.1439	7 42 27.3	9.607
18	10 35 30.61	2.1403	7 32 49.9	9.638
19	10 37 38.93	2.1368	7 23 10.7	9.668
20	10 39 47.03	2.1333	7 13 29.7	9.697
21	10 41 54.92	2.1298	7 3 47.0	9.725
22	10 44 2.61	2.1264	6 54 2.7	9.752
23	10 46 10.09	2.1230	N. 6 44 16.8	9.777

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 48 17.37	2.1196	N. 6 34 29.4	9.802
1	10 50 24.45	2.1163	6 24 40.5	9.827
2	10 52 31.33	2.1130	6 14 50.1	9.851
3	10 54 38.02	2.1098	6 4 58.4	9.873
4	10 56 44.51	2.1067	5 55 5.4	9.894
5	10 58 50.82	2.1036	5 45 11.1	9.915
6	11 0 56.94	2.1005	5 35 15.6	9.936
7	11 3 2.88	2.0974	5 25 18.9	9.954
8	11 5 8.63	2.0944	5 15 21.1	9.972
9	11 7 14.21	2.0915	5 5 22.3	9.989
10	11 9 19.61	2.0886	4 55 22.5	10.005
11	11 11 24.84	2.0858	4 45 21.7	10.021
12	11 13 29.90	2.0830	4 35 20.0	10.036
13	11 15 34.79	2.0802	4 25 17.5	10.049
14	11 17 39.52	2.0775	4 15 14.1	10.061
15	11 19 44.09	2.0748	4 5 10.0	10.073
16	11 21 48.50	2.0722	3 55 5.3	10.086
17	11 23 52.76	2.0697	3 44 59.8	10.096
18	11 25 56.86	2.0671	3 34 53.8	10.105
19	11 28 0.81	2.0646	3 24 47.2	10.113
20	11 30 4.61	2.0622	3 14 40.2	10.121
21	11 32 8.27	2.0598	3 4 32.7	10.128
22	11 34 11.79	2.0575	2 54 24.8	10.134
23	11 36 15.17	2.0552	2 44 16.6	10.140
24	11 38 18.41	2.0530	N. 2 34 8.0	10.145

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 38 18.41	2.0530	N. 2 34 8.0	10.146
1	11 40 21.52	2.0508	2 23 59.2	10.149
2	11 42 24.50	2.0486	2 13 50.1	10.152
3	11 44 27.35	2.0464	2 3 40.9	10.154
4	11 46 30.07	2.0443	1 53 31.6	10.156
5	11 48 32.67	2.0423	1 43 22.2	10.157
6	11 50 35.15	2.0404	1 33 12.8	10.156
7	11 52 37.52	2.0385	1 23 3.5	10.155
8	11 54 39.77	2.0366	1 12 54.2	10.154
9	11 56 41.91	2.0348	1 2 45.0	10.152
10	11 58 43.94	2.0330	0 52 36.0	10.149
11	12 0 45.86	2.0312	0 42 27.2	10.144
12	12 2 47.68	2.0296	0 32 18.7	10.139
13	12 4 49.40	2.0279	0 22 10.5	10.134
14	12 6 51.03	2.0263	0 12 2.6	10.128
15	12 8 52.56	2.0247	N. 0 1 55.1	10.122
16	12 10 53.99	2.0232	S. 0 8 12.0	10.114
17	12 12 55.33	2.0217	0 18 18.6	10.105
18	12 14 56.59	2.0202	0 28 24.6	10.096
19	12 16 57.76	2.0188	0 38 30.1	10.087
20	12 18 58.85	2.0174	0 48 35.0	10.077
21	12 20 59.86	2.0162	0 58 39.2	10.065
22	12 23 0.79	2.0150	1 8 42.8	10.053
23	12 25 1.65	2.0138	S. 1 18 45.6	10.040

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 27 2.44	2.0126	S. 1 28 47.6	10.027
1	12 29 3.16	2.0114	1 38 48.8	10.013
2	12 31 3.81	2.0103	1 48 49.1	9.998
3	12 33 4.40	2.0093	1 58 48.5	9.983
4	12 35 4.92	2.0083	2 8 46.9	9.966
5	12 37 5.38	2.0073	2 18 44.4	9.949
6	12 39 5.79	2.0064	2 28 40.8	9.931
7	12 41 6.15	2.0055	2 38 36.1	9.912
8	12 43 6.45	2.0046	2 48 30.3	9.893
9	12 45 6.70	2.0038	2 58 23.3	9.873
10	12 47 6.91	2.0030	3 8 15.1	9.853
11	12 49 7.07	2.0023	3 18 5.7	9.832
12	12 51 7.19	2.0016	3 27 55.0	9.810
13	12 53 7.27	2.0010	3 37 42.9	9.787
14	12 55 7.31	2.0004	3 47 29.5	9.764
15	12 57 7.31	1.9998	3 57 14.7	9.741
16	12 59 7.28	1.9993	4 6 58.4	9.716
17	13 1 7.24	1.9988	4 16 40.6	9.691
18	13 3 7.13	1.9983	4 26 21.3	9.665
19	13 5 7.04	1.9979	4 36 0.4	9.639
20	13 7 6.88	1.9975	4 45 38.0	9.612
21	13 9 6.72	1.9972	4 55 13.9	9.584
22	13 11 6.56	1.9968	5 4 48.1	9.556
23	13 13 6.34	1.9965	5 14 20.6	9.527
24	13 15 6.12	1.9963	S. 5 23 51.3	9.497

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 15 6.12	1.9963	S. 5 23 51.3	9.497
1	13 17 5.89	1.9961	5 33 20.2	9.466
2	13 19 5.65	1.9959	5 42 47.2	9.435
3	13 21 5.40	1.9958	5 52 12.4	9.403
4	13 23 5.14	1.9957	6 1 35.6	9.370
5	13 25 4.88	1.9956	6 10 56.9	9.337
6	13 27 4.61	1.9956	6 20 16.1	9.304
7	13 29 4.34	1.9955	6 29 33.3	9.270
8	13 31 4.07	1.9955	6 38 48.5	9.235
9	13 33 3.80	1.9956	6 48 1.5	9.199
10	13 35 3.54	1.9957	6 57 12.4	9.163
11	13 37 3.28	1.9958	7 6 21.1	9.127
12	13 39 3.03	1.9960	7 15 27.6	9.090
13	13 41 2.78	1.9960	7 24 31.8	9.051
14	13 43 2.55	1.9962	7 33 33.7	9.012
15	13 45 2.33	1.9965	7 42 33.2	8.973
16	13 47 2.13	1.9967	7 51 30.4	8.933
17	13 49 1.94	1.9970	8 0 25.2	8.893
18	13 51 1.77	1.9973	8 9 17.5	8.852
19	13 53 1.62	1.9977	8 18 7.4	8.810
20	13 55 1.49	1.9980	8 26 54.7	8.767
21	13 57 1.38	1.9984	8 35 39.4	8.724
22	13 59 1.30	1.9988	8 44 21.6	8.681
23	14 1 1.24	1.9993	S. 8 53 1.2	8.637

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 3 1.20	1.9996	S. 9 1 38.1	8.592
1	14 5 1.19	2.0000	9 10 12.3	8.547
2	14 7 1.21	2.0005	9 18 43.7	8.501
3	14 9 1.26	2.0012	9 27 12.4	8.455
4	14 11 1.35	2.0018	9 35 38.3	8.408
5	14 13 1.47	2.0023	9 44 1.3	8.360
6	14 15 1.62	2.0029	9 52 21.5	8.312
7	14 17 1.81	2.0035	10 0 38.8	8.263
8	14 19 2.04	2.0041	10 8 53.1	8.213
9	14 21 2.31	2.0048	10 17 4.4	8.163
10	14 23 2.61	2.0054	10 25 12.7	8.113
11	14 25 2.95	2.0061	10 33 18.0	8.062
12	14 27 3.34	2.0068	10 41 20.2	8.010
13	14 29 3.77	2.0075	10 49 19.8	7.958
14	14 31 4.24	2.0082	10 57 15.2	7.906
15	14 33 4.76	2.0090	11 5 7.9	7.853
16	14 35 5.32	2.0098	11 12 57.5	7.799
17	14 37 5.93	2.0106	11 20 43.8	7.745
18	14 39 6.59	2.0114	11 28 26.9	7.690
19	14 41 7.30	2.0122	11 36 6.6	7.634
20	14 43 8.05	2.0130	11 43 43.0	7.578
21	14 45 8.85	2.0138	11 51 16.0	7.522
22	14 47 9.71	2.0146	11 58 45.7	7.465
23	14 49 10.61	2.0155	12 6 11.9	7.408
24	14 51 11.57	2.0164	S. 12 13 34.6	7.350

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 17.					**SUNDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 51 11.57	2.0164	S. 12 13 34.6	7.350	0	16 29 4.28	2.0611	S. 16 50 35.2	4.034
1	14 53 12.58	2.0173	12 20 53.9	7.292	1	16 31 7.97	2.0618	16 54 34.9	3.956
2	14 55 13.65	2.0182	12 28 9.6	7.233	2	16 33 11.70	2.0626	16 58 29.9	3.877
3	14 57 14.77	2.0191	12 35 21.8	7.173	3	16 35 15.48	2.0633	17 2 20.2	3.798
4	14 59 15.94	2.0200	12 42 30.3	7.113	4	16 37 19.30	2.0640	17 6 5.7	3.719
5	15 1 17.17	2.0209	12 49 35.2	7.052	5	16 39 23.16	2.0648	17 9 46.5	3.639
6	15 3 18.45	2.0219	12 56 36.5	6.991	6	16 41 27.07	2.0655	17 13 22.5	3.560
7	15 5 19.79	2.0228	13 3 34.1	6.929	7	16 43 31.02	2.0662	17 16 53.7	3.480
8	15 7 21.19	2.0238	13 10 28.0	6.867	8	16 45 35.01	2.0669	17 20 20.2	3.400
9	15 9 22.65	2.0248	13 17 18.1	6.804	9	16 47 39.04	2.0675	17 23 41.8	3.320
10	15 11 24.16	2.0257	13 24 4.5	6.741	10	16 49 43.11	2.0682	17 26 58.6	3.240
11	15 13 25.73	2.0266	13 30 47.1	6.678	11	16 51 47.22	2.0688	17 30 10.6	3.159
12	15 15 27.35	2.0276	13 37 25.9	6.614	12	16 53 51.36	2.0694	17 33 17.7	3.078
13	15 17 29.03	2.0285	13 44 0.8	6.550	13	16 55 55.54	2.0700	17 36 19.9	2.997
14	15 19 30.77	2.0295	13 50 31.9	6.485	14	16 57 59.76	2.0706	17 39 17.3	2.916
15	15 21 32.57	2.0305	13 56 59.0	6.419	15	17 0 4.01	2.0711	17 42 9.8	2.835
16	15 23 34.43	2.0315	14 3 22.2	6.353	16	17 2 8.29	2.0717	17 44 57.4	2.753
17	15 25 36.35	2.0325	14 9 41.5	6.287	17	17 4 12.60	2.0722	17 47 40.1	2.671
18	15 27 38.33	2.0335	14 15 56.7	6.220	18	17 6 16.95	2.0727	17 50 17.9	2.589
19	15 29 40.37	2.0344	14 22 7.9	6.153	19	17 8 21.33	2.0732	17 52 50.8	2.507
20	15 31 42.46	2.0354	14 28 15.0	6.086	20	17 10 25.73	2.0737	17 55 18.7	2.425
21	15 33 44.62	2.0364	14 34 18.1	6.018	21	17 12 30.16	2.0741	17 57 41.7	2.342
22	15 35 46.83	2.0374	14 40 17.1	5.949	22	17 14 34.62	2.0745	17 59 59.7	2.259
23	15 37 49.10	2.0383	S. 14 46 12.0	5.880	23	17 16 39.10	2.0749	S. 18 2 12.7	2.176
	SATURDAY 18.					**MONDAY 20.**			
0	15 39 51.43	2.0393	S. 14 52 2.7	5.811	0	17 18 43.61	2.0753	S. 18 4 20.8	2.093
1	15 41 53.82	2.0403	14 57 49.2	5.741	1	17 20 48.13	2.0756	18 6 23.8	2.009
2	15 43 56.27	2.0413	15 3 31.6	5.671	2	17 22 52.68	2.0760	18 8 21.9	1.926
3	15 45 58.78	2.0423	15 9 9.7	5.600	3	17 24 57.25	2.0763	18 10 15.0	1.843
4	15 48 1.34	2.0433	15 14 43.6	5.529	4	17 27 1.84	2.0766	18 12 3.0	1.759
5	15 50 3.97	2.0443	15 20 13.2	5.458	5	17 29 6.45	2.0769	18 13 46.0	1.675
6	15 52 6.65	2.0452	15 25 38.6	5.386	6	17 31 11.07	2.0772	18 15 24.0	1.591
7	15 54 9.39	2.0461	15 30 59.6	5.314	7	17 33 15.71	2.0774	18 16 56.9	1.507
8	15 56 12.18	2.0471	15 36 16.3	5.241	8	17 35 20.36	2.0776	18 18 24.8	1.423
9	15 58 15.03	2.0480	15 41 28.6	5.168	9	17 37 25.02	2.0778	18 19 47.6	1.339
10	16 0 17.94	2.0489	15 46 36.5	5.095	10	17 39 29.70	2.0780	18 21 5.4	1.254
11	16 2 20.90	2.0498	15 51 40.1	5.022	11	17 41 34.39	2.0782	18 22 18.1	1.169
12	16 4 23.92	2.0507	15 56 39.2	4.948	12	17 43 39.08	2.0783	18 23 25.7	1.085
13	16 6 26.99	2.0517	16 1 33.8	4.873	13	17 45 43.78	2.0784	18 24 28.3	1.001
14	16 8 30.12	2.0526	16 6 24.0	4.798	14	17 47 48.49	2.0785	18 25 25.8	0.917
15	16 10 33.30	2.0535	16 11 9.7	4.723	15	17 49 53.20	2.0786	18 26 18.2	0.832
16	16 12 36.54	2.0544	16 15 50.8	4.648	16	17 51 57.92	2.0786	18 27 5.6	0.748
17	16 14 39.83	2.0553	16 20 27.4	4.573	17	17 54 2.64	2.0787	18 27 47.9	0.663
18	16 16 43.17	2.0562	16 24 59.5	4.497	18	17 56 7.36	2.0787	18 28 25.2	0.578
19	16 18 46.56	2.0570	16 29 27.0	4.420	19	17 58 12.08	2.0787	18 28 57.3	0.493
20	16 20 50.01	2.0579	16 33 49.9	4.343	20	18 0 16.80	2.0786	18 29 24.4	0.409
21	16 22 53.51	2.0587	16 38 8.2	4.266	21	18 2 21.52	2.0786	18 29 46.4	0.324
22	16 24 57.05	2.0595	16 42 21.8	4.189	22	18 4 26.23	2.0785	18 30 3.3	0.240
23	16 27 0.64	2.0603	16 46 30.8	4.112	23	18 6 30.94	2.0784	18 30 15.1	0.155
24	16 29 4.28	2.0611	S. 16 50 35.2	4.034	24	18 8 35.64	2.0783	S. 18 30 21.9	0.070

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 21.					**THURSDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 8 35.64	2.0783	S. 18 30 21.9	0.070	0	19 47 53.66	2.0641	S. 16 57 31.5	3.884
1	18 10 40.33	2.0782	18 30 23.5	0.015	1	19 49 56.88	2.0633	16 53 36.1	3.962
2	18 12 45.02	2.0781	18 30 20.1	0.099	2	19 52 0.05	2.0626	16 49 36.1	4.039
3	18 14 49.70	2.0779	18 30 11.6	0.184	3	19 54 3.18	2.0618	16 45 31.5	4.116
4	18 16 54.37	2.0777	18 29 58.0	0.269	4	19 56 6.26	2.0611	16 41 22.2	4.193
5	18 18 59.03	2.0775	18 29 39.3	0.354	5	19 58 9.30	2.0503	16 37 8.3	4.270
6	18 21 3.67	2.0773	18 29 15.5	0.438	6	20 0 12.29	2.0496	16 32 49.8	4.347
7	18 23 8.30	2.0770	18 28 46.6	0.523	7	20 2 15.23	2.0487	16 28 26.7	4.423
8	18 25 12.91	2.0767	18 28 12.7	0.608	8	20 4 18.13	2.0480	16 23 59.0	4.499
9	18 27 17.50	2.0764	18 27 33.7	0.693	9	20 6 20.99	2.0473	16 19 26.8	4.575
10	18 29 22.08	2.0761	18 26 49.6	0.777	10	20 8 23.80	2.0465	16 14 50.0	4.651
11	18 31 26.64	2.0758	18 26 0.5	0.861	11	20 10 26.56	2.0457	16 10 8.7	4.726
12	18 33 31.18	2.0755	18 25 6.3	0.945	12	20 12 29.28	2.0450	16 5 22.9	4.801
13	18 35 35.70	2.0752	18 24 7.1	1.029	13	20 14 31.95	2.0442	16 0 32.6	4.875
14	18 37 40.20	2.0748	18 23 2.8	1.113	14	20 16 34.58	2.0435	15 55 37.9	4.950
15	18 39 44.67	2.0743	18 21 53.5	1.197	15	20 18 37.16	2.0427	15 50 38.7	5.024
16	18 41 49.12	2.0739	18 20 39.1	1.281	16	20 20 39.70	2.0420	15 45 35.1	5.098
17	18 43 53.54	2.0735	18 19 19.7	1.365	17	20 22 42.20	2.0413	15 40 27.0	5.172
18	18 45 57.94	2.0731	18 17 55.3	1.449	18	20 24 44.65	2.0405	15 35 14.5	5.245
19	18 48 2.31	2.0726	18 16 25.9	1.532	19	20 26 47.06	2.0398	15 29 57.7	5.317
20	18 50 6.65	2.0722	18 14 51.5	1.616	20	20 28 49.43	2.0391	15 24 36.5	5.390
21	18 52 10.97	2.0717	18 13 12.1	1.698	21	20 30 51.76	2.0384	15 19 10.9	5.462
22	18 54 15.25	2.0712	18 11 27.7	1.781	22	20 32 54.04	2.0377	15 13 41.0	5.534
23	18 56 19.50	2.0706	S. 18 9 38.3	1.865	23	20 34 56.28	2.0371	S. 15 8 6.8	5.605
	WEDNESDAY 22.					**FRIDAY 24.**			
0	18 58 23.72	2.0701	S. 18 7 43.9	1.948	0	20 36 58.49	2.0364	S. 15 2 28.4	5.677
1	19 0 27.91	2.0695	18 5 44.6	2.030	1	20 39 0.66	2.0358	14 56 45.7	5.738
2	19 2 32.06	2.0690	18 3 40.3	2.113	2	20 41 2.79	2.0351	14 50 58.7	5.808
3	19 4 36.18	2.0684	18 1 31.1	2.195	3	20 43 4.88	2.0345	14 45 7.5	5.878
4	19 6 40.27	2.0678	17 59 16.9	2.278	4	20 45 6.93	2.0339	14 39 12.2	5.958
5	19 8 44.32	2.0672	17 56 57.8	2.360	5	20 47 8.95	2.0333	14 33 12.7	6.027
6	19 10 48.33	2.0666	17 54 33.7	2.442	6	20 49 10.93	2.0327	14 27 9.0	6.096
7	19 12 52.30	2.0659	17 52 4.7	2.524	7	20 51 12.87	2.0321	14 21 1.2	6.165
8	19 14 56.24	2.0653	17 49 30.8	2.606	8	20 53 14.78	2.0315	14 14 49.2	6.233
9	19 17 0.14	2.0647	17 46 52.0	2.688	9	20 55 16.66	2.0310	14 8 33.2	6.301
10	19 19 4.00	2.0640	17 44 8.3	2.769	10	20 57 18.50	2.0305	14 2 13.1	6.369
11	19 21 7.82	2.0633	17 41 19.8	2.849	11	20 59 20.32	2.0300	13 55 48.9	6.437
12	19 23 11.60	2.0627	17 38 26.4	2.930	12	21 1 22.10	2.0295	13 49 20.7	6.504
13	19 25 15.34	2.0620	17 35 28.2	3.011	13	21 3 23.86	2.0290	13 42 48.5	6.570
14	19 27 19.04	2.0613	17 32 25.1	3.091	14	21 5 25.58	2.0285	13 36 12.3	6.637
15	19 29 22.70	2.0606	17 29 17.2	3.172	15	21 7 27.27	2.0280	13 29 32.1	6.703
16	19 31 26.31	2.0599	17 26 4.5	3.252	16	21 9 28.94	2.0276	13 22 48.0	6.768
17	19 33 29.88	2.0592	17 22 47.0	3.332	17	21 11 30.59	2.0272	13 15 59.9	6.833
18	19 35 33.41	2.0585	17 19 24.7	3.411	18	21 13 32.21	2.0268	13 9 8.0	6.898
19	19 37 36.90	2.0578	17 15 57.7	3.490	19	21 15 33.81	2.0264	13 2 12.2	6.962
20	19 39 40.34	2.0571	17 12 25.9	3.569	20	21 17 35.38	2.0261	12 55 12.5	7.027
21	19 41 43.74	2.0563	17 8 49.4	3.648	21	21 19 36.94	2.0258	12 48 9.0	7.091
22	19 43 47.09	2.0556	17 5 8.1	3.727	22	21 21 38.48	2.0255	12 41 1.6	7.154
23	19 45 50.40	2.0548	17 1 22.2	3.806	23	21 23 40.00	2.0252	12 33 50.5	7.217
24	19 47 53.66	2.0541	S. 16 57 31.5	3.884	24	21 25 41.50	2.0249	S. 12 26 35.6	7.280

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 25 41.50	2.0249	S. 12 26 35.6	7.280
1	21 27 42.99	2.0247	12 19 17.0	7.342
2	21 29 44.46	2.0245	12 11 54.6	7.403
3	21 31 45.92	2.0243	12 4 28.6	7.464
4	21 33 47.38	2.0242	11 56 58.9	7.525
5	21 35 48.83	2.0241	11 49 25.6	7.585
6	21 37 50.27	2.0239	11 41 48.7	7.645
7	21 39 51.70	2.0238	11 34 8.2	7.705
8	21 41 53.13	2.0239	11 26 24.1	7.764
9	21 43 54.55	2.0238	11 18 36.5	7.823
10	21 45 55.98	2.0238	11 10 45.4	7.881
11	21 47 57.41	2.0238	11 2 50.8	7.938
12	21 49 58.84	2.0239	10 54 52.8	7.996
13	21 52 0.28	2.0240	10 46 51.3	8.053
14	21 54 1.72	2.0241	10 38 46.4	8.110
15	21 56 3.17	2.0243	10 30 38.1	8.166
16	21 58 4.63	2.0245	10 22 26.5	8.222
17	22 0 6.10	2.0247	10 14 11.5	8.278
18	22 2 7.59	2.0250	10 5 53.2	8.332
19	22 4 9.10	2.0253	9 57 31.6	8.386
20	22 6 10.62	2.0256	9 49 6.8	8.440
21	22 8 12.16	2.0259	9 40 38.7	8.494
22	22 10 13.73	2.0263	9 32 7.5	8.547
23	22 12 15.32	2.0267	S. 9 23 33.1	8.599

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 14 16.93	2.0271	S. 9 14 55.6	8.651
1	22 16 18.57	2.0276	9 6 14.9	8.703
2	22 18 20.24	2.0282	8 57 31.2	8.754
3	22 20 21.95	2.0288	8 48 44.5	8.804
4	22 22 23.69	2.0294	8 39 54.7	8.854
5	22 24 25.47	2.0300	8 31 1.9	8.904
6	22 26 27.29	2.0307	8 22 6.2	8.953
7	22 28 29.15	2.0314	8 13 7.5	9.002
8	22 30 31.06	2.0321	8 4 6.0	9.050
9	22 32 33.01	2.0329	7 55 1.6	9.097
10	22 34 35.01	2.0338	7 45 54.4	9.144
11	22 36 37.06	2.0347	7 36 44.4	9.190
12	22 38 39.17	2.0356	7 27 31.6	9.236
13	22 40 41.33	2.0365	7 18 16.0	9.282
14	22 42 43.55	2.0375	7 8 57.8	9.327
15	22 44 45.83	2.0386	6 59 36.9	9.371
16	22 46 48.18	2.0397	6 50 13.3	9.415
17	22 48 50.59	2.0408	6 40 47.1	9.458
18	22 50 53.07	2.0419	6 31 18.4	9.501
19	22 52 55.62	2.0431	6 21 47.1	9.543
20	22 54 58.24	2.0444	6 12 13.3	9.584
21	22 57 0.94	2.0457	6 2 37.0	9.625
22	22 59 3.72	2.0470	5 52 58.3	9.665
23	23 1 6.58	2.0483	5 43 17.2	9.705
24	23 3 9.52	2.0496	S. 5 33 33.7	9.744

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 3 9.52	2.0496	S. 5 33 33.7	9.744
1	23 5 12.55	2.0513	5 23 47.8	9.783
2	23 7 15.67	2.0528	5 13 59.9	9.821
3	23 9 18.88	2.0543	5 4 9.4	9.858
4	23 11 22.18	2.0559	4 54 16.8	9.896
5	23 13 25.58	2.0576	4 44 22.0	9.931
6	23 15 29.09	2.0593	4 34 25.1	9.966
7	23 17 32.70	2.0610	4 24 26.1	10.001
8	23 19 36.41	2.0628	4 14 25.0	10.035
9	23 21 40.23	2.0647	4 4 21.9	10.068
10	23 23 44.17	2.0666	3 54 16.8	10.101
11	23 25 48.22	2.0685	3 44 9.8	10.133
12	23 27 52.38	2.0704	3 34 0.9	10.164
13	23 29 56.67	2.0725	3 23 50.1	10.195
14	23 32 1.08	2.0746	3 13 37.5	10.225
15	23 34 5.62	2.0767	3 3 23.1	10.255
16	23 36 10.28	2.0788	2 53 6.9	10.284
17	23 38 15.07	2.0810	2 42 49.0	10.312
18	23 40 20.00	2.0833	2 32 29.5	10.339
19	23 42 25.07	2.0857	2 22 8.3	10.366
20	23 44 30.28	2.0880	2 11 45.6	10.392
21	23 46 35.63	2.0904	2 1 21.3	10.417
22	23 48 41.13	2.0929	1 50 55.6	10.441
23	23 50 46.78	2.0954	S. 1 40 28.4	10.464

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 52 52.58	2.0980	S. 1 29 59.9	10.487
1	23 54 58.54	2.1006	1 19 30.0	10.509
2	23 57 4.65	2.1033	1 8 58.8	10.530
3	23 59 10.93	2.1060	0 58 26.4	10.550
4	0 1 17.37	2.1088	0 47 52.8	10.569
5	0 3 23.98	2.1116	0 37 18.1	10.588
6	0 5 30.76	2.1146	0 26 42.2	10.606
7	0 7 37.71	2.1174	0 16 5.3	10.623
8	0 9 44.84	2.1203	S. 0 5 27.4	10.639
9	0 11 52.15	2.1233	N. 0 5 11.5	10.656
10	0 13 59.64	2.1264	0 15 51.2	10.669
11	0 16 7.32	2.1296	0 26 31.8	10.683
12	0 18 15.18	2.1326	0 37 13.2	10.696
13	0 20 23.23	2.1358	0 47 55.3	10.708
14	0 22 31.48	2.1391	0 58 38.1	10.719
15	0 24 39.93	2.1425	1 9 21.6	10.729
16	0 26 48.58	2.1459	1 20 5.6	10.738
17	0 28 57.43	2.1493	1 30 50.1	10.746
18	0 31 6.49	2.1528	1 41 35.1	10.753
19	0 33 15.76	2.1563	1 52 20.5	10.759
20	0 35 25.24	2.1599	2 3 6.2	10.764
21	0 37 34.94	2.1636	2 13 52.2	10.769
22	0 39 44.85	2.1672	2 24 38.5	10.772
23	0 41 54.98	2.1708	2 35 24.9	10.774
24	0 44 5.34	2.1746	N. 2 46 11.4	10.776

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 44 5.34	2.1746	N. 2 46 11.4	10.776
1	0 46 15.92	2.1783	2 56 58.0	10.777
2	0 48 26.74	2.1822	3 7 44.6	10.776
3	0 50 37.79	2.1861	3 18 31.1	10.773
4	0 52 49.07	2.1900	3 29 17.4	10.770
5	0 55 0.59	2.1940	3 40 3.5	10.767
6	0 57 12.35	2.1981	3 50 49.4	10.763
7	0 59 24.36	2.2022	4 1 34.9	10.756
8	1 1 36.61	2.2063	4 12 20.1	10.749
9	1 3 49.11	2.2106	4 23 4.8	10.740
10	1 6 1.87	2.2147	4 33 48.9	10.731
11	1 8 14.88	2.2189	4 44 32.5	10.721
12	1 10 28.14	2.2232	4 55 15.4	10.709
13	1 12 41.66	2.2276	5 5 57.6	10.696
14	1 14 55.45	2.2320	5 16 38.9	10.682
15	1 17 9.50	2.2364	5 27 19.4	10.667
16	1 19 23.82	2.2408	5 37 58.9	10.651
17	1 21 38.40	2.2453	5 48 37.4	10.633
18	1 23 53.26	2.2499	5 59 14.8	10.614
19	1 26 8.39	2.2545	6 9 51.1	10.594
20	1 28 23.80	2.2591	6 20 26.1	10.573
21	1 30 39.48	2.2638	6 30 59.8	10.551
22	1 32 55.45	2.2685	6 41 32.2	10.527
23	1 35 11.70	2.2733	N. 6 52 3.1	10.502

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 37 28.24	2.2780	N. 7 2 32.4	10.476
1	1 39 45.07	2.2828	7 13 0.2	10.448
2	1 42 2.18	2.2876	7 23 26.2	10.419
3	1 44 19.58	2.2925	7 33 50.5	10.389
4	1 46 37.28	2.2974	7 44 12.9	10.358
5	1 48 55.27	2.3023	7 54 33.4	10.325
6	1 51 13.56	2.3073	8 4 51.9	10.291
7	1 53 32.15	2.3123	8 15 8.3	10.256
8	1 55 51.04	2.3173	8 25 22.6	10.219
9	1 58 10.23	2.3224	8 35 34.6	10.181
10	2 0 29.73	2.3274	8 45 44.3	10.142
11	2 2 49.53	2.3325	8 55 51.6	10.101
12	2 5 9.63	2.3376	9 5 56.4	10.059
13	2 7 30.04	2.3428	9 15 58.6	10.015
14	2 9 50.76	2.3479	9 25 58.2	9.970
15	2 12 11.79	2.3531	9 35 55.1	9.924
16	2 14 33.13	2.3583	9 45 49.1	9.877
17	2 16 54.78	2.3635	9 55 40.2	9.828
18	2 19 16.75	2.3687	10 5 28.4	9.777
19	2 21 39.03	2.3739	10 15 13.4	9.724
20	2 24 1.62	2.3791	10 24 55.3	9.670
21	2 26 24.53	2.3844	10 34 33.9	9.616
22	2 28 47.75	2.3897	10 44 9.2	9.560
23	2 31 11.29	2.3950	10 53 41.1	9.503
24	2 33 35.15	2.4002	N. 11 3 9.5	9.444

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 33 35.15	2.4002	N. 11 3 9.5	9.444
1	2 35 59.32	2.4055	11 12 34.2	9.382
2	2 38 23.81	2.4108	11 21 55.3	9.320
3	2 40 48.62	2.4161	11 31 12.6	9.257
4	2 43 13.74	2.4214	11 40 26.1	9.192
5	2 45 39.18	2.4267	11 49 35.6	9.126
6	2 48 4.94	2.4320	11 58 41.1	9.057
7	2 50 31.01	2.4372	12 7 42.5	8.987
8	2 52 57.40	2.4425	12 16 39.6	8.916
9	2 55 24.10	2.4477	12 25 32.4	8.844
10	2 57 51.12	2.4530	12 34 20.9	8.770
11	3 0 18.45	2.4582	12 43 4.9	8.695
12	3 2 46.10	2.4634	12 51 44.3	8.618
13	3 5 14.06	2.4686	13 0 19.0	8.540
14	3 7 42.33	2.4737	13 8 49.1	8.461
15	3 10 10.91	2.4788	13 17 14.4	8.380
16	3 12 39.79	2.4840	13 25 34.7	8.297
17	3 15 8.98	2.4891	13 33 50.0	8.213
18	3 17 38.48	2.4942	13 42 0.2	8.128
19	3 20 8.28	2.4992	13 50 5.3	8.041
20	3 22 38.38	2.5042	13 58 5.1	7.953
21	3 25 8.78	2.5092	14 5 59.6	7.863
22	3 27 39.48	2.5141	14 13 48.6	7.772
23	3 30 10.47	2.5189	N. 14 21 32.1	7.679

SATURDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 32 41.75	2.5236	N. 14 29 10.1	7.585

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	3	19	40.3
☽ First Quarter, . .	10	10	4.3
○ Full Moon, . . .	18	1	52.2
☾ Last Quarter, . .	26	5	21.9

	d	h
☾ Perigee, ...	5	10.8
☾ Apogee, ...	20	23.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	a Aquilæ	W.	67° 16′ 13″	2915	68° 48′ 13″	2887	70° 20′ 48″	2859	71° 54′ 0″	2831
	Jupiter	W.	30 10 47	2467	31 52 46	2449	33 35 11	2431	35 18 2	2412
	Sun	E.	37 37 29	2748	36 1 53	2731	34 25 54	2716	32 49 35	2701
6	Sun	W.	30 51 32	2396	32 35 10	2398	34 18 48	2400	36 2 23	2403
	Pollux	E.	37 16 0	2310	35 30 15	2337	33 45 10	2368	32 0 50	2404
	Regulus	E.	72 9 14	2072	70 17 31	2076	68 25 55	2081	66 34 26	2086
7	Sun	W.	44 38 46	2431	46 21 37	2438	48 4 17	2447	49 46 45	2456
	Regulus	E.	57 19 19	2120	55 28 51	2129	53 38 36	2138	51 48 35	2147
	Spica	E.	110 50 51	2130	109 0 38	2138	107 10 37	2146	105 20 48	2155
8	Sun	W.	58 15 47	2507	59 56 51	2517	61 37 40	2530	63 18 12	2542
	Regulus	E.	42 42 15	2200	40 53 48	2212	39 5 39	2225	37 17 48	2237
	Spica	E.	96 15 18	2205	94 26 58	2216	92 38 55	2228	90 51 9	2239
9	Sun	W.	71 36 32	2607	73 15 18	2620	74 53 46	2634	76 31 55	2648
	Spica	E.	81 56 42	2301	80 10 44	2313	78 25 4	2327	76 39 44	2340
	Saturn	E.	111 10 53	2266	109 24 4	2279	107 37 34	2291	105 51 22	2304
10	Sun	W.	84 38 0	2717	86 14 17	2732	87 50 15	2746	89 25 54	2760
	Pollux	W.	24 34 46	2861	26 7 29	2838	27 41 8	2804	29 15 31	2777
	Spica	E.	67 57 52	2407	66 14 27	2421	64 31 22	2434	62 48 36	2448
	Saturn	E.	97 5 7	2369	95 20 48	2382	93 36 48	2396	91 53 8	2408
	Antares	E.	113 34 0	2461	111 51 52	2473	110 10 1	2484	108 28 25	2496
11	Sun	W.	97 19 33	2830	98 53 22	2844	100 26 53	2857	102 0 7	2871
	Pollux	W.	37 13 44	2718	38 50 0	2715	40 26 20	2713	42 2 42	2714
	Mars	W.	20 34 18	2809	22 8 34	2803	23 42 58	2800	25 17 26	2801
	Spica	E.	54 19 35	2517	52 38 45	2530	50 58 14	2544	49 18 2	2557
	Saturn	E.	83 19 19	2473	81 37 28	2486	79 55 54	2499	78 14 39	2511
	Antares	E.	100 4 37	2556	98 24 42	2569	96 45 4	2581	95 5 43	2593
12	Sun	W.	109 41 55	2938	111 13 26	2951	112 44 40	2964	114 15 38	2977
	Pollux	W.	50 3 55	2731	51 39 54	2737	53 15 45	2742	54 51 29	2749
	Mars	W.	33 8 57	2824	34 42 54	2831	36 16 41	2839	37 50 18	2846
	Spica	E.	41 1 43	2627	39 23 25	2640	37 45 25	2655	36 7 45	2670
	Saturn	E.	69 52 37	2572	68 13 3	2583	66 33 43	2595	64 54 41	2606
	Antares	E.	86 53 3	2653	85 15 20	2666	83 37 54	2678	82 0 44	2689
13	Sun	W.	121 46 32	3039	123 15 57	3051	124 45 7	3062	126 14 3	3074
	Pollux	W.	62 47 51	2786	64 22 38	2793	65 57 16	2801	67 31 43	2808
	Mars	W.	45 35 37	2893	47 8 6	2901	48 40 24	2910	50 12 30	2920
	Regulus	W.	26 1 11	2703	27 37 47	2711	29 14 12	2719	30 50 26	2729
	Saturn	E.	56 43 18	2660	55 5 45	2672	53 28 27	2682	51 51 23	2692
	Antares	E.	73 58 48	2748	72 23 12	2760	70 47 51	2771	69 12 45	2783
14	Sun	W.	133 35 6	3132	135 2 36	3143	136 29 53	3155	137 56 56	3166
	Pollux	W.	75 21 23	2848	76 54 48	2857	78 28 2	2865	80 1 6	2873
	Mars	W.	57 50 7	2965	59 21 5	2973	60 51 51	2982	62 22 26	2991
	Regulus	W.	38 48 40	2772	40 23 45	2781	41 58 38	2789	43 33 20	2798
	Saturn	E.	43 49 26	2741	42 13 41	2751	40 38 9	2760	39 2 48	2769
	Antares	E.	61 21 5	2841	59 47 30	2853	58 14 11	2865	56 41 7	2877
245	Pollux	W.	87 43 48	2913	89 15 50	2922	90 47 41	2930	92 19 22	2937

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	α Aquilæ	W.	73° 27′ 47″	2807	75° 2′ 6″	2784	76° 36′ 55″	2763	78° 12′ 17″	2742
	Jupiter	W.	37 1 19	2394	38 45 3	2377	40 29 11	2360	42 13 44	2342
	Sun	E.	31 12 57	2687	29 36 0	2674	27 58 45	2661	26 21 13	2650
6	Sun	W.	37 45 53	2407	39 29 18	2412	41 12 36	2417	42 55 46	2424
	Pollux	E.	30 17 21	2448	28 34 54	2500	26 53 41	2564	25 13 56	2641
	Regulus	E.	64 43 5	2092	62 51 53	2098	61 0 51	2105	59 9 59	2113
7	Sun	W.	51 29 1	2466	53 11 4	2475	54 52 53	2485	56 34 27	2496
	Regulus	E.	49 58 48	2157	48 9 16	2167	46 19 59	2178	44 30 59	2189
	Spica	E.	103 31 13	2165	101 41 52	2174	99 52 45	2184	98 3 54	2194
8	Sun	W.	64 58 27	2554	66 38 25	2567	68 18 5	2580	69 57 27	2593
	Regulus	E.	35 30 15	2250	33 43 2	2263	31 56 8	2277	30 9 35	2291
	Spica	E.	89 3 40	2251	87 16 29	2263	85 29 35	2275	83 42 59	2288
9	Sun	W.	78 9 45	2661	79 47 17	2675	81 24 30	2689	83 1 24	2703
	Spica	E.	74 54 43	2253	73 10 1	2267	71 25 39	2280	69 41 36	2294
	Saturn	E.	104 5 29	2317	102 19 55	2331	100 34 40	2344	98 49 44	2357
10	Sun	W.	91 1 15	2774	92 36 17	2788	94 11 1	2802	95 45 26	2816
	Pollux	W.	30 50 29	2757	32 25 53	2742	34 1 37	2732	35 37 35	2723
	Spica	E.	61 6 9	2461	59 24 1	2475	57 42 13	2489	56 0 44	2503
	Saturn	E.	90 9 45	2422	88 26 41	2435	86 43 56	2448	85 1 29	2460
	Antares	E.	106 47 6	2508	105 6 4	2520	103 25 18	2532	101 44 49	2544
11	Sun	W.	103 33 3	2884	105 5 42	2898	106 38 3	2912	108 10 7	2924
	Pollux	W.	43 39 3	2716	45 15 22	2718	46 51 38	2722	48 27 49	2725
	Mars	W.	26 51 53	2802	28 26 18	2806	30 0 38	2811	31 34 51	2817
	Spica	E.	47 38 8	2571	45 58 33	2585	44 19 17	2599	42 40 20	2613
	Saturn	E.	76 33 41	2522	74 52 59	2535	73 12 35	2548	71 32 28	2559
	Antares	E.	93 26 38	2606	91 47 50	2617	90 9 18	2629	88 31 2	2641
12	Sun	W.	115 46 20	2989	117 16 46	3001	118 46 57	3014	120 16 52	3026
	Pollux	W.	56 27 4	2756	58 2 30	2763	59 37 47	2770	61 12 54	2778
	Mars	W.	39 23 44	2856	40 56 59	2865	42 30 3	2873	44 2 56	2883
	Spica	E.	34 30 25	2686	32 53 25	2700	31 16 45	2716	29 40 26	2733
	Saturn	E.	63 15 54	2617	61 37 22	2628	59 59 5	2640	58 21 5	2650
	Antares	E.	80 23 49	2701	78 47 10	2713	77 10 47	2725	75 34 40	2736
13	Sun	W.	127 42 44	3086	129 11 11	3098	130 39 23	3109	132 7 22	3121
	Pollux	W.	69 6 0	2817	70 40 6	2825	72 14 2	2832	73 47 48	2841
	Mars	W.	51 44 25	2928	53 16 7	2938	54 47 39	2946	56 18 59	2955
	Regulus	W.	32 26 28	2738	34 2 18	2746	35 37 57	2755	37 13 24	2763
	Saturn	E.	50 14 32	2702	48 37 55	2713	47 1 33	2722	45 25 23	2732
	Antares	E.	67 37 55	2796	66 3 20	2806	64 29 0	2818	62 54 55	2829
14	Sun	W.	139 23 46	3179	140 50 20	3190	142 16 41	3201	143 42 49	3213
	Pollux	W.	81 33 59	2881	83 6 42	2890	84 39 14	2898	86 11 36	2905
	Mars	W.	63 52 51	2999	65 23 5	3008	66 53 8	3016	68 23 0	3025
	Regulus	W.	45 7 51	2806	46 42 11	2815	48 16 20	2823	49 50 19	2831
	Saturn	E.	37 27 40	2779	35 52 45	2788	34 18 2	2798	32 43 31	2806
	Antares	E.	55 8 19	2889	53 35 46	2901	52 3 29	2914	50 31 28	2927
15	Pollux	W.	93 50 54	2946	95 22 15	2954	96 53 26	2962	98 24 27	2969

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Mars	W.	69° 52′ 43″	3033	71° 22′ 15″	3041	72° 51′ 37″	3049	74° 20′ 49″	3057
	Regulus	W.	51 24 7	2838	52 57 45	2847	54 31 12	2854	56 4 30	2862
	Saturn	E.	31 9 11	2816	29 35 3	2826	28 1 7	2833	26 27 22	2843
	Antares	E.	48 59 44	2940	47 28 16	2954	45 57 6	2968	44 26 13	2983
16	Pollux	W.	99 55 18	2977	101 25 59	2986	102 56 29	2994	104 26 49	3001
	Mars	W.	81 44 27	3095	83 12 43	3103	84 40 50	3110	86 8 48	3117
	Regulus	W.	63 48 35	2898	65 20 56	2905	66 53 8	2912	68 25 11	2919
	Antares	E.	36 56 43	3069	35 27 56	3091	33 59 35	3112	32 31 40	3136
	a Aquilæ	E.	86 46 9	3333	85 22 36	3343	83 59 14	3352	82 36 3	3362
17	Mars	W.	93 26 30	3151	94 53 38	3158	96 20 38	3164	97 47 30	3170
	Regulus	W.	76 3 21	2952	77 34 34	2958	79 5 40	2964	80 36 38	2969
	Spica	W.	22 50 54	3037	24 20 21	3033	25 49 53	3030	27 19 28	3028
	a Aquilæ	E.	75 43 12	3421	74 21 19	3434	72 59 41	3448	71 38 19	3462
	Jupiter	E.	110 59 39	2994	109 29 19	3000	107 59 6	3006	106 29 1	3012
18	Mars	W.	104 59 58	3201	106 26 6	3207	107 52 8	3212	109 18 3	3218
	Regulus	W.	88 9 39	2998	89 39 54	3003	91 10 3	3009	92 40 5	3013
	Spica	W.	34 47 16	3037	36 16 43	3039	37 46 8	3041	39 15 30	3043
	a Aquilæ	E.	64 55 54	3549	63 36 24	3569	62 17 16	3590	60 58 31	3612
	Fomalhaut	E.	97 3 30	3349	95 40 15	3352	94 17 4	3356	92 53 57	3360
	Jupiter	E.	99 0 21	3039	97 30 57	3046	96 1 40	3050	94 32 29	3055
19	Regulus	W.	100 8 50	3036	101 38 18	3041	103 7 40	3044	104 36 58	3048
	Spica	W.	46 41 30	3058	48 10 31	3062	49 39 27	3064	51 8 20	3067
	Saturn	W.	18 5 15	3026	19 34 53	3030	21 4 28	3030	22 34 3	3033
	a Aquilæ	E.	54 31 19	3748	53 15 23	3781	52 0 1	3817	50 45 16	3854
	Fomalhaut	E.	85 59 38	3385	84 37 4	3390	83 14 36	3396	81 52 15	3402
	Jupiter	E.	87 8 1	3078	85 39 23	3081	84 10 51	3085	82 42 23	3089
20	Spica	W.	58 31 58	3079	60 0 33	3082	61 29 5	3083	62 57 35	3085
	Saturn	W.	30 1 21	3043	31 30 41	3044	32 59 59	3046	34 29 15	3047
	Fomalhaut	E.	75 2 26	3439	73 40 54	3447	72 19 31	3456	70 58 17	3465
	Jupiter	E.	75 21 8	3105	73 53 4	3107	72 25 3	3110	70 57 5	3111
	a Pegasi	E.	89 43 8	3313	88 19 12	3317	86 55 20	3320	85 31 32	3324
21	Spica	W.	70 19 38	3091	71 47 59	3091	73 16 20	3091	74 44 41	3091
	Saturn	W.	41 55 9	3062	43 24 17	3064	44 53 23	3063	46 22 30	3063
	Antares	W.	25 54 3	3388	27 16 33	3360	28 39 35	3335	30 3 6	3313
	Jupiter	E.	63 37 47	3119	62 10 0	3119	60 42 14	3119	59 14 28	3119
	Fomalhaut	E.	64 14 54	3518	62 54 50	3531	61 35 0	3545	60 15 25	3558
	a Pegasi	E.	78 33 31	3342	77 10 8	3345	75 46 49	3350	74 23 35	3353
	Venus	E.	114 52 25	3535	113 32 40	3536	112 12 55	3535	110 53 10	3536
22	Spica	W.	82 6 32	3087	83 34 58	3084	85 3 27	3082	86 31 58	3080
	Saturn	W.	53 48 12	3048	55 17 25	3047	56 46 39	3044	58 15 57	3043
	Antares	W.	37 6 12	3234	38 31 41	3222	39 57 24	3211	41 23 20	3200
	Jupiter	E.	51 55 35	3116	50 27 45	3114	48 59 53	3113	47 31 59	3110
	Fomalhaut	E.	53 41 40	3648	52 23 54	3666	51 6 31	3690	49 49 33	3715
	a Pegasi	E.	67 28 36	3377	66 5 53	3382	64 43 16	3388	63 20 46	3393
	Venus	E.	104 14 25	3532	102 54 36	3531	101 34 46	3527	100 14 52	3526
	Sun	E.	136 46 59	3471	135 26 2	3468	134 5 2	3464	132 43 58	3460
23	Spica	W.	93 55 26	3063	95 24 21	3058	96 53 22	3053	98 22 29	3048

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Mars	W.	75° 49′ 52″	3066	77° 18′ 45″	3072	78° 47′ 28″	3080	80° 16′ 3″	3087
	Regulus	W.	57 37 38	2869	59 10 36	2876	60 43 25	2883	62 16 5	2891
	Saturn	E.	24 53 50	2852	23 20 29	2862	21 47 21	2872	20 14 26	2880
	Antares	E.	42 55 39	2998	41 25 24	3014	39 55 29	3031	38 25 55	3049
16	Pollux	W.	105 57 0	3009	107 27 1	3018	108 56 51	3026	110 26 31	3034
	Mars	W.	87 36 37	3124	89 4 18	3131	90 31 50	3138	91 59 14	3144
	Regulus	W.	69 57 6	2926	71 28 52	2932	73 0 30	2939	74 32 0	2946
	Antares	E.	31 4 14	3168	29 37 20	3198	28 11 2	3227	26 45 25	3256
	a Aquilæ	E.	81 13 3	3373	79 50 16	3384	78 27 41	3396	77 5 20	3408
17	Mars	W.	99 14 14	3177	100 40 51	3183	102 7 21	3189	103 33 43	3195
	Regulus	W.	82 7 29	2976	83 38 12	2981	85 8 48	2987	86 39 17	2993
	Spica	W.	28 49 4	3030	30 18 40	3031	31 48 14	3033	33 17 46	3034
	a Aquilæ	E	70 17 14	3479	68 56 26	3495	67 35 56	3512	66 15 45	3530
	Jupiter	E.	104 59 3	3018	103 29 12	3023	101 59 28	3029	100 29 51	3034
18	Mars	W.	110 43 51	3223	112 9 32	3228	113 35 8	3233	115 0 37	3239
	Regulus	W.	94 10 2	3018	95 39 53	3022	97 9 38	3027	98 39 17	3032
	Spica	W.	40 44 49	3046	42 14 5	3049	43 43 17	3052	45 12 25	3055
	a Aquilæ	E.	59 40 10	3636	58 22 15	3662	57 4 47	3689	55 47 48	3717
	Fomalhaut	E.	91 30 55	3364	90 7 57	3369	88 45 5	3374	87 22 19	3379
	Jupiter	E.	93 3 24	3060	91 34 25	3065	90 5 32	3069	88 36 44	3073
19	Regulus	W.	106 6 11	3052	107 35 19	3056	109 4 23	3059	110 33 23	3062
	Spica	W.	52 37 10	3069	54 5 57	3073	55 34 40	3075	57 3 20	3077
	Saturn	W.	24 3 35	3034	25 33 5	3036	27 2 33	3039	28 31 58	3040
	a Aquilæ	E.	49 31 9	3896	48 17 44	3937	47 5 2	3985	45 53 8	4035
	Fomalhaut	E.	80 30 1	3409	79 7 55	3416	77 45 57	3423	76 24 7	3431
	Jupiter	E.	81 14 0	3092	79 45 41	3096	78 17 26	3099	76 49 15	3102
20	Spica	W.	64 26 3	3087	65 54 29	3088	67 22 53	3089	68 51 16	3090
	Saturn	W.	35 58 29	3048	37 27 42	3051	38 56 52	3052	40 26 1	3052
	Fomalhaut	E.	69 37 14	3474	68 16 21	3485	66 55 40	3496	65 35 11	3506
	Jupiter	E.	69 29 9	3114	68 1 16	3115	66 33 25	3116	65 5 35	3118
	a Pegasi	E.	84 7 48	3327	82 44 8	3330	81 20 31	3334	79 56 59	3338
21	Spica	W.	76 13 2	3091	77 41 23	3090	79 9 45	3089	80 38 8	3088
	Saturn	W.	47 51 37	3052	49 20 45	3052	50 49 53	3052	52 19 2	3051
	Antares	W.	31 27 2	3294	32 51 21	3276	34 16 1	3261	35 40 58	3247
	Jupiter	E.	57 46 43	3119	56 18 57	3119	54 51 11	3119	53 23 24	3117
	Fomalhaut	E.	58 56 5	3573	57 37 1	3589	56 18 15	3606	54 59 47	3625
	a Pegasi	E.	73 0 25	3358	71 37 20	3362	70 14 20	3366	68 51 25	3372
	Venus	E.	109 33 26	3536	108 13 42	3535	106 53 57	3535	105 34 11	3535
22	Spica	W.	88 0 32	3078	89 29 9	3074	90 57 50	3070	92 26 36	3067
	Saturn	W.	59 45 17	3039	61 14 41	3036	62 44 9	3033	64 13 41	3029
	Antares	W.	42 49 29	3190	44 15 50	3181	45 42 22	3171	47 9 6	3163
	Jupiter	E.	46 4 1	3108	44 36 1	3105	43 7 57	3101	41 39 49	3098
	Fomalhaut	E.	48 33 2	3743	47 17 0	3773	46 1 30	3806	44 46 34	3842
	a Pegasi	E.	61 58 22	3400	60 36 6	3408	59 13 58	3415	57 51 59	3423
	Venus	E.	98 54 56	3523	97 34 57	3519	96 14 54	3515	94 54 47	3511
	Sun	E.	131 22 49	3456	130 1 36	3452	128 40 18	3447	127 18 55	3442
23	Spica	W.	99 51 42	3043	101 21 2	3037	102 50 29	3030	104 20 4	3023

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Saturn	W.	65° 43′ 18″	3036	67° 13′ 0″	3030	68° 42′ 48″	3016	70° 12′ 42″	3009
	Antares	W.	48 36 0	3158	50 3 6	3144	51 30 22	3135	52 57 49	3126
	Jupiter	E.	40 11 36	3094	38 43 19	3090	37 14 57	3085	35 46 30	3081
	Fomalhaut	E.	43 32 15	3883	42 18 38	3927	41 5 46	3977	39 53 44	4033
	a Pegasi	E.	56 30 8	3431	55 8 27	3441	53 46 57	3452	52 25 39	3463
	Venus	E.	93 34 35	3506	92 14 18	3502	90 53 56	3496	89 33 27	3490
	Sun	E.	125 57 26	3437	124 35 51	3431	123 14 10	3425	121 52 22	3419
24	Saturn	W.	77 44 1	2977	79 14 43	2970	80 45 33	2962	82 16 34	2953
	Antares	W.	60 17 51	3079	61 46 26	3069	63 15 14	3059	64 44 14	3049
	Jupiter	E.	28 22 35	3052	26 53 27	3047	25 24 10	3039	23 54 46	3033
	a Pegasi	E.	45 42 55	3546	44 23 20	3566	43 4 9	3591	41 45 25	3621
	Venus	E.	82 49 17	3454	81 28 2	3446	80 6 37	3437	78 45 2	3428
	Sun	E.	115 1 26	3381	113 38 48	3372	112 16 0	3364	110 53 2	3354
25	Saturn	W.	89 54 31	2906	91 26 44	2894	92 59 11	2883	94 31 52	2870
	Antares	W.	72 12 30	2993	73 42 52	2981	75 13 29	2969	76 44 21	2956
	a Pegasi	E.	35 21 1	3836	34 6 36	3901	32 53 17	3974	31 41 12	4062
	Venus	E.	71 54 19	3372	70 31 31	3362	69 8 31	3350	67 45 17	3337
	Sun	E.	103 55 15	3300	102 31 3	3288	101 6 37	3276	99 41 57	3263
26	Saturn	W.	102 19 16	2806	103 53 36	2792	105 28 14	2779	107 3 10	2763
	Antares	W.	84 22 47	2889	85 55 20	2874	87 28 12	2860	89 1 22	2845
	a Aquilæ	W.	41 20 59	3977	42 33 1	3896	43 46 25	3820	45 1 6	3750
	Venus	E.	60 45 11	3266	59 20 19	3250	57 55 9	3234	56 29 40	3218
	Sun	E.	92 34 37	3192	91 8 18	3176	89 41 40	3161	88 14 44	3145
27	Antares	W.	96 52 11	2767	98 27 22	2751	100 2 54	2735	101 38 48	2718
	a Aquilæ	W.	51 31 29	3463	52 52 35	3414	54 14 36	3368	55 37 29	3324
	Venus	E.	49 17 20	3132	47 49 49	3114	46 21 56	3096	44 53 41	3078
	Sun	E.	80 55 6	3060	79 26 7	3043	77 56 47	3024	76 27 4	3006
28	Antares	W.	109 43 50	2636	111 21 58	2618	113 0 29	2601	114 39 23	2585
	a Aquilæ	W.	62 43 56	3132	64 11 27	3098	65 39 39	3065	67 8 31	3034
	Fomalhaut	W.	32 25 4	4065	33 35 40	3919	34 48 41	3788	36 3 56	3672
	Jupiter	W.	21 35 47	2617	23 14 19	2596	24 53 20	2575	26 32 49	2554
	Venus	E.	37 26 39	2981	35 56 2	2962	34 25 1	2942	32 53 36	2924
	Sun	E.	68 52 43	2911	67 20 38	2892	65 48 9	2873	64 15 15	2853
29	*a* Aquilæ	W.	74 42 14	2891	76 14 44	2866	77 47 47	2841	79 21 22	2818
	Fomalhaut	W.	42 48 7	3239	44 13 42	3161	45 40 38	3096	47 8 50	3041
	Jupiter	W.	34 57 19	2454	36 39 37	2434	38 22 23	2415	40 5 36	2396
	a Pegasi	W.	28 38 15	3771	29 53 47	3620	31 12 0	3484	32 32 42	3364
	Sun	E.	56 24 28	2756	54 49 3	2737	53 13 12	2718	51 36 56	2699
30	*a* Aquilæ	W.	87 16 35	2718	88 52 58	2696	90 29 44	2678	92 6 53	2658
	Fomalhaut	W.	54 46 18	2803	56 20 42	2764	57 55 57	2727	59 32 1	2693
	Jupiter	W.	48 48 31	2302	50 34 29	2286	52 20 51	2267	54 7 40	2249
	a Pegasi	W.	39 46 18	2934	41 17 54	2871	42 50 50	2814	44 25 0	2762
	Sun	E.	43 29 29	2611	41 50 49	2596	40 11 47	2580	38 32 24	2564
31	*a* Aquilæ	W.	100 17 20	2603	101 56 11	2586	103 35 12	2569	105 14 22	2554
	Fomalhaut	W.	67 43 4	2548	69 23 11	2524	71 3 51	2502	72 45 2	2480
	a Pegasi	W.	52 31 30	2554	54 11 28	2521	55 52 12	2490	57 33 39	2462
	Sun	E.	30 10 46	2506	28 29 41	2499	26 48 27	2494	25 7 5	2492

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Saturn	W.	71° 42′ 43″	3005	73° 12′ 50″	2997	74° 43′ 6″	2991	76° 13′ 29″	2985
	Antares	W.	54 25 27	3117	55 53 16	3108	57 21 16	3098	58 49 28	3089
	Jupiter	E.	34 17 56	3075	32 49 16	3069	31 20 30	3064	29 51 36	3060
	Fomalhaut	E.	38 42 37	4095	37 32 30	4165	36 23 31	4244	35 15 46	4330
	a Pegasi	E.	51 4 34	3477	49 43 44	3490	48 23 9	3506	47 2 52	3525
	Venus	E.	88 12 52	3484	86 52 10	3477	85 31 20	3469	84 10 23	3463
	Sun	E.	120 30 27	3412	119 8 24	3405	117 46 13	3398	116 23 54	3390
24	Saturn	W.	83 47 46	2944	85 19 9	2935	86 50 43	2924	88 22 31	2915
	Antares	W.	66 13 26	3036	67 42 52	3027	69 12 31	3017	70 42 23	3006
	Jupiter	E.	22 25 14	3026	20 55 34	3020	19 25 46	3014	17 55 52	3009
	a Pegasi	E.	40 27 13	3653	39 9 36	3689	37 52 37	3730	36 36 22	3782
	Venus	E.	77 23 17	3418	76 1 21	3407	74 39 12	3397	73 16 52	3386
	Sun	E.	109 29 53	3344	108 6 32	3333	106 42 59	3322	105 19 13	3312
25	Saturn	W.	96 4 49	2859	97 38 1	2846	99 11 29	2833	100 45 14	2820
	Antares	W.	78 15 29	2943	79 46 53	2930	81 18 34	2916	82 50 32	2903
	a Pegasi	E.	30 30 33	4163	29 21 32	4281	28 14 22	4421	27 9 20	4587
	Venus	E.	66 21 48	3323	64 58 3	3309	63 34 2	3296	62 9 46	3280
	Sun	E.	98 17 1	3249	96 51 50	3235	95 26 22	3221	94 0 38	3207
26	Saturn	W.	108 38 26	2748	110 14 2	2733	111 49 58	2718	113 26 14	2701
	Antares	W.	90 34 52	2829	92 8 42	2814	93 42 52	2799	95 17 21	2783
	a Aquilæ	W.	46 17 0	3686	47 34 2	3624	48 52 10	3567	50 11 20	3514
	Venus	E.	55 3 52	3202	53 37 45	3184	52 11 17	3168	50 44 29	3150
	Sun	E.	86 47 29	3129	85 19 54	3112	83 51 59	3095	82 23 43	3078
27	Antares	W.	103 15 4	2701	104 51 42	2685	106 28 42	2668	108 6 5	2652
	a Aquilæ	W.	57 1 13	3282	58 25 45	3242	59 51 4	3204	61 17 8	3168
	Venus	E.	43 25 4	3058	41 56 3	3039	40 26 39	3020	38 56 51	3001
	Sun	E.	74 56 59	2988	73 26 31	2969	71 55 39	2950	70 24 23	2931
28	Antares	W.	116 18 39	2567	117 58 19	2552	119 38 20	2536	121 18 43	2520
	a Aquilæ	W.	68 38 2	3003	70 8 11	2973	71 38 57	2946	73 10 18	2918
	Fomalhaut	W.	37 21 13	3566	38 40 24	3470	40 1 22	3382	41 23 59	3303
	Jupiter	W.	28 12 47	2534	29 53 13	2514	31 34 7	2494	33 15 29	2474
	Venus	E.	31 21 47	2903	29 49 32	2884	28 16 53	2865	26 43 49	2844
	Sun	E.	62 41 56	2834	61 8 12	2815	59 34 3	2796	57 59 28	2776
29	a Aquilæ	W.	80 55 27	2796	82 30 2	2772	84 5 6	2752	85 40 37	2732
	Fomalhaut	W.	48 38 12	2966	50 8 42	2926	51 40 15	2889	53 12 48	2848
	Jupiter	W.	41 49 18	2376	43 33 26	2357	45 18 2	2339	47 3 4	2321
	a Pegasi	W.	33 55 40	3258	35 20 41	3164	36 47 33	3079	38 16 8	3002
	Sun	E.	50 0 15	2681	48 23 10	2663	46 45 40	2645	45 7 46	2628
30	a Aquilæ	W.	93 44 22	2649	95 22 11	2636	97 0 18	2623	98 38 42	2612
	Fomalhaut	W.	61 8 50	2660	62 46 23	2629	64 24 38	2601	66 3 32	2573
	Jupiter	W.	55 54 53	2234	57 42 30	2219	59 30 34	2205	61 18 59	2192
	a Pegasi	W.	46 0 18	2713	47 36 40	2668	49 14 3	2627	50 52 21	2590
	Sun	E.	36 52 40	2551	35 12 37	2538	33 32 16	2525	31 51 38	2515
31	a Aquilæ	W.	106 53 39	2581	108 33 0	2580	110 12 23	2581	111 51 44	2585
	Fomalhaut	W.	74 26 43	2461	76 8 51	2443	77 51 24	2426	79 34 21	2412
	a Pegasi	W.	59 15 45	2436	60 58 28	2412	62 41 46	2390	64 25 35	2371
	Sun	E.	23 25 40	2493	21 44 16	2498	20 3 0	2510	18 22 1	2532

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	4 35 28.92	10.228	N.22 1 56.3	20.61	15 48.29	68.39	2 30.90	0.372
Sun.	2	4 39 34.63	10.244	22 9 59.7	19.65	15 48.16	68.45	2 21.76	0.388
Mon.	3	4 43 40.73	10.260	22 17 39.9	18.68	15 48.03	68.50	2 12.25	0.404
Tues.	4	4 47 47.19	10.275	22 24 56.8	17.71	15 47.91	68.55	2 2.38	0.418
Wed.	5	4 51 53.99	10.289	22 31 50.2	16.73	15 47.79	68.60	1 52.16	0.432
Thur.	6	4 56 1.13	10.302	22 38 20.0	15.74	15 47.68	68.65	1 41.61	0.445
Fri.	7	5 0 8.57	10.314	22 44 26.0	14.75	15 47.57	68.69	1 30.75	0.457
Sat.	8	5 4 16.29	10.325	22 50 7.9	13.75	15 47.46	68.73	1 19.61	0.468
Sun.	9	5 8 24.28	10.336	22 55 25.8	12.74	15 47.36	68.77	1 8.22	0.479
Mon.	10	5 12 32.51	10.345	23 0 19.6	11.73	15 47.27	68.81	0 56.59	0.488
Tues.	11	5 16 40.94	10.354	23 4 49.1	10.72	15 47.18	68.84	0 44.74	0.497
Wed.	12	5 20 49.56	10.362	23 8 54.2	9.70	15 47.09	68.87	0 32.70	0.505
Thur.	13	5 24 58.36	10.369	23 12 34.8	8.68	15 47.01	68.89	0 20.49	0.512
Fri.	14	5 29 7.32	10.375	23 15 50.8	7.66	15 46.93	68.91	0 8.12	0.518
Sat.	15	5 33 16.42	10.380	23 18 42.3	6.63	15 46.85	68.93	0 4.39	0.524
Sun.	16	5 37 25.65	10.384	23 21 9.1	5.60	15 46.77	68.95	0 17.02	0.528
Mon.	17	5 41 34.97	10.388	23 23 11.2	4.57	15 46.70	68.96	0 29.75	0.532
Tues.	18	5 45 44.36	10.391	23 24 48.5	3.54	15 46.63	68.97	0 42.55	0.535
Wed.	19	5 49 53.81	10.393	23 26 1.0	2.50	15 46.57	68.98	0 55.41	0.537
Thur.	20	5 54 3.32	10.394	23 26 48.7	1.47	15 46.51	68.98	1 8.32	0.538
Fri.	21	5 58 12.83	10.395	23 27 11.7	0.43	15 46.45	68.98	1 21.25	0.539
Sat.	22	6 2 22.34	10.395	23 27 9.9	0.60	15 46.39	68.98	1 34.18	0.538
Sun.	23	6 6 31.85	10.394	23 26 43.1	1.63	15 46.34	68.97	1 47.09	0.537
Mon.	24	6 10 41.30	10.392	23 25 51.6	2.66	15 46.29	68.96	1 59.96	0.534
Tues.	25	6 14 50.69	10.388	23 24 35.5	3.69	15 46.25	68.94	2 12.75	0.531
Wed.	26	6 19 0.00	10.384	23 22 54.7	4.72	15 46.21	68.92	2 25.45	0.526
Thur.	27	6 23 9.18	10.378	23 20 49.2	5.74	15 46.18	68.90	2 38.04	0.521
Fri.	28	6 27 18.21	10.372	23 18 19.0	6.77	15 46.15	68.88	2 50.48	0.515
Sat.	29	6 31 27.08	10.364	23 15 24.3	7.79	15 46.13	68.85	3 2.76	0.508
Sun.	30	6 35 35.77	10.356	23 12 5.1	8.81	15 46.12	68.82	3 14.86	0.499
Mon.	31	6 39 44.23	10.346	N.23 8 21.5	9.82	15 46.11	68.79	3 26.74	0.489

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be ~~added to~~ subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	4 35 29.35	10.228	N.22 1 57.3	20.61	2 30.88	0.372	4 38 0.23
Sun.	2	4 39 35.04	10.244	22 10 0.6	19.65	2 21.74	0.388	4 41 56.78
Mon.	3	4 43 41.11	10.260	22 17 40.7	18.68	2 12.23	0.404	4 45 53.34
Tues.	4	4 47 47.54	10.275	22 24 57.4	17.71	2 2.36	0.418	4 49 49.90
Wed.	5	4 51 54.31	10.289	22 31 50.7	16.73	1 52.14	0.432	4 53 46.45
Thur.	6	4 56 1.42	10.302	22 38 20.4	15.74	1 41.59	0.445	4 57 43.01
Fri.	7	5 0 8.83	10.314	22 44 26.3	14.75	1 30.74	0.457	5 1 39.57
Sat.	8	5 4 16.52	10.325	22 50 8.2	13.75	1 19.60	0.468	5 5 36.12
Sun.	9	5 8 24.47	10.336	22 55 26.0	12.74	1 8.21	0.479	5 9 32.68
Mon.	10	5 12 32.66	10.345	23 0 19.8	11.73	0 56.58	0.488	5 13 29.24
Tues.	11	5 16 41.06	10.354	23 4 49.3	10.72	0 44.73	0.497	5 17 25.79
Wed.	12	5 20 49.65	10.362	23 8 54.3	9.70	0 32.70	0.505	5 21 22.35
Thur.	13	5 24 58.42	10.369	23 12 34.8	8.68	0 20.49	0.512	5 25 18.91
Fri.	14	5 29 7.35	10.375	23 15 50.8	7.66	0 8.11	0.518	5 29 15.46
Sat.	15	5 33 16.41	10.380	23 18 42.3	6.63	0 4.39	0.524	5 33 12.02
Sun.	16	5 37 25.60	10.384	23 21 9.1	5.60	0 17.02	0.528	5 37 8.58
Mon.	17	5 41 34.88	10.388	23 23 11.2	4.57	0 29.75	0.532	5 41 5.13
Tues.	18	5 45 44.23	10.391	23 24 48.5	3.54	0 42.54	0.535	5 45 1.69
Wed.	19	5 49 53.65	10.393	23 26 1.0	2.50	0 55.40	0.537	5 48 58.25
Thur.	20	5 54 3.12	10.394	23 26 48.7	1.47	1 8.32	0.538	5 52 54.80
Fri.	21	5 58 12.60	10.395	23 27 11.7	0.43	1 21.24	0.539	5 56 51.36
Sat.	22	6 2 22.08	10.395	23 27 9.9	0.60	1 34.16	0.538	6 0 47.92
Sun.	23	6 6 31.54	10.394	23 26 43.2	1.63	1 47.07	0.537	6 4 44.47
Mon.	24	6 10 40.97	10.392	23 25 51.8	2.66	1 59.94	0.534	6 8 41.03
Tues.	25	6 14 50.31	10.388	23 24 35.7	3.69	2 12.72	0.531	6 12 37.59
Wed.	26	6 18 59.58	10.384	23 22 54.9	4.72	2 25.43	0.526	6 16 34.15
Thur.	27	6 23 8.72	10.378	23 20 49.4	5.74	2 38.02	0.521	6 20 30.70
Fri.	28	6 27 17.72	10.372	23 18 19.3	6.77	2 50.46	0.515	6 24 27.26
Sat.	29	6 31 26.56	10.364	23 15 24.6	7.79	3 2.74	0.508	6 28 23.82
Sun.	30	6 35 35.21	10.356	23 12 5.5	8.81	3 14.84	0.499	6 32 20.37
Mon.	31	6 39 43.63	10.346	N.23 8 22.0	9.82	3 26.70	0.489	6 36 16.93

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	152	70 29 10.3	28 53.5	143.70	—0.32	0.0062317	26.2	19 18 49.40
2	153	71 26 38.8	26 21.9	143.66	0.35	.0062933	25.2	19 14 53.49
3	154	72 24 6.3	23 49.2	143.63	0.35	.0063524	24.1	19 10 57.58
4	155	73 21 32.8	21 15.5	143.59	0.31	.0064091	23.1	19 7 1.68
5	156	74 18 58.3	18 40.9	143.54	0.25	.0064634	22.1	19 3 5.77
6	157	75 16 22.7	16 5.2	143.50	0.16	.0065154	21.1	18 59 9.86
7	158	76 13 46.1	13 28.4	143.45	—0.06	.0065652	20.2	18 55 13.95
8	159	77 11 8.4	10 50.5	143.41	+0.06	.0066129	19.4	18 51 18.03
9	160	78 8 29.8	8 11.7	143.37	0.19	.0066585	18.6	18 47 22.12
10	161	79 5 50.2	5 32.0	143.32	0.33	.0067022	17.8	18 43 26.21
11	162	80 3 9.5	2 51.2	143.28	0.46	.0067440	17.1	18 39 30.30
12	163	81 0 27.8	0 9.3	143.24	0.57	.0067840	16.4	18 35 34.39
13	164	81 57 45.2	57 26.5	143.21	0.67	.0068224	15.7	18 31 38.47
14	165	82 55 1.7	54 42.8	143.18	0.75	.0068592	15.1	18 27 42.56
15	166	83 52 17.5	51 58.5	143.15	0.80	.0068946	14.5	18 23 46.65
16	167	84 49 32.7	49 13.5	143.12	0.81	.0069287	13.9	18 19 50.75
17	168	85 46 47.4	46 28.0	143.10	0.80	.0069614	13.3	18 15 54.84
18	169	86 44 1.6	43 42.0	143.08	0.76	.0069927	12.7	18 11 58.93
19	170	87 41 15.4	40 55.6	143.07	0.69	.0070225	12.1	18 8 3.02
20	171	88 38 28.9	38 9.0	143.06	0.59	.0070508	11.5	18 4 7.10
21	172	89 35 42.1	35 22.1	143.05	0.49	.0070777	10.8	18 0 11.19
22	173	90 32 55.1	32 34.9	143.04	0.36	.0071029	10.1	17 56 15.27
23	174	91 30 8.1	29 47.7	143.04	0.23	.0071263	9.3	17 52 19.36
24	175	92 27 21.1	27 0.5	143.04	+0.09	.0071476	8.5	17 48 23.46
25	176	93 24 34.1	24 13.4	143.04	—0.04	.0071673	7.6	17 44 27.55
26	177	94 21 47.1	21 26.3	143.04	0.15	.0071847	6.7	17 40 31.64
27	178	95 19 0.1	18 39.0	143.04	0.25	.0071998	5.7	17 36 35.73
28	179	96 16 13.1	15 51.9	143.04	0.31	.0072125	4.7	17 32 39.81
29	180	97 13 26.2	13 4.8	143.04	0.35	.0072226	3.7	17 28 43.90
30	181	98 10 39.2	10 17.7	143.04	0.36	.0072302	2.6	17 24 47.99
31	182	99 7 52.3	7 30.7	143.04	—0.33	0.0072352	1.5	17 20 52.07

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 35.6	16 39.0	60 47.5	+1.34	61 1.6	+0.99	23 52.3	2.56	28.2
2	16 42.1	16 43.4	61 11.2	+0.60	61 16.0	+0.20	δ		29.2
3	16 43.4	16 42.0	61 16.0	−0.20	61 11.2	−0.60	0 54.5	2.61	0.9
4	16 39.5	16 35.8	61 1.7	0.96	60 48.1	1.29	1 57.1	2.58	1.9
5	16 31.1	16 25.5	60 30.8	1.57	60 10.4	1.80	2 58.0	2.48	2.9
6	16 19.3	16 12.6	59 47.5	1.98	59 22.9	2.10	3 55.8	2.34	3.9
7	16 5.6	15 58.4	58 57.1	2.17	58 30.7	2.20	4 50.2	2.19	4.9
8	15 51.2	15 44.2	58 4.4	2.18	57 38.5	2.12	5 41.3	2.07	5.9
9	15 37.4	15 30.8	57 13.5	2.04	56 49.6	1.93	6 29.6	1.97	6.9
10	15 24.7	15 19.0	56 27.1	1.82	56 6.0	1.69	7 16.1	1.91	7.9
11	15 13.7	15 8.8	55 46.6	1.55	55 28.8	1.41	8 1.5	1.88	8.9
12	15 4.5	15 0.5	55 12.7	1.27	54 58.2	1.13	8 46.6	1.88	9.9
13	14 57.1	14 54.0	54 45.5	0.99	54 34.4	0.86	9 31.9	1.90	10.9
14	14 51.4	14 49.2	54 24.8	0.73	54 16.8	0.61	10 17.8	1.92	11.9
15	14 47.4	14 46.0	54 10.2	0.49	54 5.0	0.37	11 4.3	1.95	12.9
16	14 45.0	14 44.3	54 1.2	0.26	53 58.7	−0.15	11 51.5	1.97	13.9
17	14 44.0	14 44.0	53 57.6	−0.04	53 57.7	+0.07	12 39.0	1.98	14.9
18	14 44.4	14 45.2	53 59.2	+0.18	54 2.1	0.20	13 26.4	1.97	15.9
19	14 46.4	14 48.0	54 6.5	0.43	54 12.4	0.56	14 13.4	1.95	16.9
20	14 50.1	14 52.6	54 20.0	0.70	54 29.2	0.84	14 59.8	1.92	17.9
21	14 55.6	14 59.1	54 40.2	0.99	54 53.1	1.15	15 45.6	1.90	18.9
22	15 3.1	15 7.6	55 7.8	1.31	55 24.4	1.46	16 31.1	1.90	19.9
23	15 12.7	15 18.2	55 42.9	1.61	56 3.2	1.77	17 16.8	1.92	20.9
24	15 24.2	15 30.7	56 25.3	1.91	56 49.0	2.04	18 3.3	1.97	21.9
25	15 37.5	15 44.7	57 14.2	2.15	57 40.5	2.23	18 51.4	2.05	22.9
26	15 52.1	15 59.6	58 7.7	2.28	58 35.2	2.29	19 42.0	2.17	23.9
27	16 7.1	16 14.4	59 2.7	2.26	59 29.5	2.17	20 35.8	2.31	24.9
28	16 21.3	16 27.6	59 54.9	2.03	60 18.2	1.83	21 33.2	2.46	25.9
29	16 33.3	16 37.9	60 38.8	1.57	60 56.0	1.26	22 33.8	2.58	26.9
30	16 41.5	16 43.9	61 9.1	0.91	61 17.8	+0.52	23 36.4	2.63	27.9
31	16 44.9	16 44.6	61 21.7	+0.12	61 20.6	−0.30	δ		28.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 32 41.75	2.5238	N.14 29 10.1	7.585
1	3 35 13.33	2.5287	14 36 42.4	7.490
2	3 37 45.19	2.5334	14 44 8.9	7.393
3	3 40 17.33	2.5381	14 51 29.6	7.295
4	3 42 49.76	2.5428	14 58 44.3	7.195
5	3 45 22.47	2.5474	15 5 53.0	7.094
6	3 47 55.45	2.5519	15 12 55.6	6.992
7	3 50 28.70	2.5564	15 19 52.0	6.888
8	3 53 2.22	2.5609	15 26 42.2	6.783
9	3 55 36.00	2.5653	15 33 26.0	6.677
10	3 58 10.05	2.5696	15 40 3.5	6.570
11	4 0 44.35	2.5738	15 46 34.5	6.462
12	4 3 18.91	2.5780	15 52 58.9	6.352
13	4 5 53.72	2.5822	15 59 16.6	6.240
14	4 8 28.77	2.5863	16 5 27.7	6.128
15	4 11 4.07	2.5903	16 11 32.0	6.015
16	4 13 39.60	2.5942	16 17 29.5	5.900
17	4 16 15.37	2.5980	16 23 20.0	5.784
18	4 18 51.36	2.6017	16 29 3.6	5.667
19	4 21 27.57	2.6053	16 34 40.1	5.549
20	4 24 4.00	2.6089	16 40 9.5	5.430
21	4 26 40.64	2.6124	16 45 31.7	5.310
22	4 29 17.49	2.6158	16 50 46.7	5.189
23	4 31 54.54	2.6192	N.16 55 54.3	5.066

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 34 31.79	2.6224	N.17 0 54.6	4.942
1	4 37 9.23	2.6255	17 5 47.4	4.818
2	4 39 46.85	2.6286	17 10 32.7	4.693
3	4 42 24.65	2.6315	17 15 10.5	4.567
4	4 45 2.63	2.6343	17 19 40.7	4.440
5	4 47 40.77	2.6370	17 24 3.2	4.311
6	4 50 19.07	2.6397	17 28 18.0	4.182
7	4 52 57.53	2.6422	17 32 25.1	4.053
8	4 55 36.15	2.6447	17 36 24.4	3.923
9	4 58 14.91	2.6471	17 40 15.8	3.791
10	5 0 53.80	2.6493	17 43 59.3	3.659
11	5 3 32.82	2.6513	17 47 34.9	3.527
12	5 6 11.96	2.6533	17 51 2.5	3.393
13	5 8 51.22	2.6553	17 54 22.1	3.259
14	5 11 30.59	2.6571	17 57 33.6	3.125
15	5 14 10.06	2.6587	18 0 37.1	2.996
16	5 16 49.63	2.6602	18 3 32.4	2.864
17	5 19 29.29	2.6617	18 6 19.6	2.718
18	5 22 9.03	2.6630	18 8 58.5	2.581
19	5 24 48.85	2.6642	18 11 29.2	2.443
20	5 27 28.73	2.6653	18 13 51.7	2.306
21	5 30 8.67	2.6662	18 16 5.9	2.168
22	5 32 48.67	2.6670	18 18 11.8	2.030
23	5 35 28.72	2.6678	18 20 9.4	1.891
24	5 38 8.80	2.6684	N.18 21 58.7	1.752

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 38 8.80	2.6684	N.18 21 58.7	1.752
1	5 40 48.91	2.6688	18 23 39.6	1.612
2	5 43 29.05	2.6691	18 25 12.1	1.472
3	5 46 9.20	2.6693	18 26 36.3	1.333
4	5 48 49.37	2.6694	18 27 52.1	1.193
5	5 51 29.54	2.6694	18 28 59.5	1.053
6	5 54 9.70	2.6692	18 29 58.4	0.913
7	5 56 49.85	2.6689	18 30 49.0	0.773
8	5 59 29.97	2.6685	18 31 31.1	0.633
9	6 2 10.07	2.6680	18 32 4.8	0.492
10	6 4 50.13	2.6674	18 32 30.1	0.352
11	6 7 30.15	2.6667	18 32 47.0	0.212
12	6 10 10.13	2.6658	18 32 55.5	0.072
13	6 12 50.05	2.6648	18 32 55.6	0.068
14	6 15 29.90	2.6637	18 32 47.3	0.208
15	6 18 9.68	2.6624	18 32 30.6	0.348
16	6 20 49.39	2.6610	18 32 5.6	0.487
17	6 23 29.01	2.6596	18 31 32.3	0.626
18	6 26 8.53	2.6579	18 30 50.6	0.765
19	6 28 47.96	2.6563	18 30 0.6	0.903
20	6 31 27.28	2.6544	18 29 2.3	1.041
21	6 34 6.49	2.6524	18 27 55.8	1.178
22	6 36 45.57	2.6503	18 26 41.0	1.316
23	6 39 24.53	2.6482	N.18 25 18.0	1.451

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 42 3.35	2.6459	N.18 23 46.9	1.587
1	6 44 42.02	2.6433	18 22 7.6	1.723
2	6 47 20.55	2.6408	18 20 20.2	1.856
3	6 49 58.93	2.6383	18 18 24.7	1.990
4	6 52 37.14	2.6356	18 16 21.1	2.126
5	6 55 15.19	2.6327	18 14 9.6	2.260
6	6 57 53.06	2.6297	18 11 50.0	2.393
7	7 0 30.75	2.6267	18 9 22.5	2.526
8	7 3 8.26	2.6235	18 6 47.0	2.657
9	7 5 45.57	2.6203	18 4 3.7	2.787
10	7 8 22.69	2.6170	18 1 12.6	2.916
11	7 10 59.60	2.6135	17 58 13.8	3.044
12	7 13 36.31	2.6099	17 55 7.3	3.172
13	7 16 12.80	2.6063	17 51 53.1	3.300
14	7 18 49.07	2.6026	17 48 31.3	3.427
15	7 21 25.12	2.5989	17 45 2.0	3.552
16	7 24 0.93	2.5950	17 41 25.1	3.677
17	7 26 36.51	2.5910	17 37 40.7	3.801
18	7 29 11.85	2.5869	17 33 49.0	3.923
19	7 31 46.94	2.5828	17 29 50.0	4.044
20	7 34 21.78	2.5786	17 25 43.7	4.165
21	7 36 56.36	2.5743	17 21 30.1	4.286
22	7 39 30.69	2.5699	17 17 9.4	4.406
23	7 42 4.75	2.5655	17 12 41.6	4.525
24	7 44 38.55	2.5610	N.17 8 6.9	4.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 44 38.55	2.5610	N.17 8 6.9	4.638
1	7 47 12.07	2.5564	17 3 25.1	4.754
2	7 49 45.32	2.5518	16 58 36.4	4.869
3	7 52 18.29	2.5471	16 53 40.9	4.982
4	7 54 50.97	2.5423	16 48 38.6	5.094
5	7 57 23.36	2.5375	16 43 29.6	5.206
6	7 59 55.47	2.5327	16 38 13.9	5.316
7	8 2 27.28	2.5278	16 32 51.7	5.424
8	8 4 58.80	2.5228	16 27 23.0	5.532
9	8 7 30.02	2.5178	16 21 47.8	5.639
10	8 10 0.93	2.5127	16 16 6.3	5.745
11	8 12 31.53	2.5075	16 10 18.5	5.849
12	8 15 1.83	2.5024	16 4 24.4	5.952
13	8 17 31.82	2.4972	15 58 24.2	6.053
14	8 20 1.49	2.4920	15 52 18.0	6.153
15	8 22 30.85	2.4867	15 46 5.8	6.253
16	8 24 59.89	2.4814	15 39 47.6	6.351
17	8 27 28.61	2.4760	15 33 23.6	6.447
18	8 29 57.01	2.4707	15 26 53.9	6.543
19	8 32 25.09	2.4653	15 20 18.5	6.638
20	8 34 52.84	2.4598	15 13 37.4	6.731
21	8 37 20.26	2.4543	15 6 50.8	6.823
22	8 39 47.36	2.4489	14 59 58.7	6.913
23	8 42 14.13	2.4434	N.14 53 1.3	7.002

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 44 40.57	2.4379	N.14 45 58.5	7.090
1	8 47 6.68	2.4323	14 38 50.5	7.176
2	8 49 32.45	2.4268	14 31 37.4	7.261
3	8 51 57.90	2.4213	14 24 19.2	7.346
4	8 54 23.01	2.4158	14 16 55.9	7.429
5	8 56 47.79	2.4102	14 9 27.7	7.510
6	8 59 12.23	2.4047	14 1 54.7	7.590
7	9 1 36.34	2.3991	13 54 16.9	7.669
8	9 4 0.12	2.3935	13 46 34.4	7.747
9	9 6 23.56	2.3879	13 38 47.3	7.823
10	9 8 46.67	2.3824	13 30 55.6	7.898
11	9 11 9.44	2.3768	13 22 59.5	7.972
12	9 13 31.88	2.3712	13 14 59.0	8.045
13	9 15 53.98	2.3656	13 6 54.2	8.116
14	9 18 15.75	2.3601	12 58 45.1	8.186
15	9 20 37.19	2.3546	12 50 31.9	8.254
16	9 22 58.30	2.3491	12 42 14.6	8.321
17	9 25 19.08	2.3436	12 33 53.3	8.388
18	9 27 39.52	2.3380	12 25 28.0	8.455
19	9 29 59.64	2.3326	12 16 58.9	8.517
20	9 32 19.43	2.3271	12 8 26.0	8.580
21	9 34 38.89	2.3216	11 59 49.4	8.641
22	9 36 58.02	2.3162	11 51 9.1	8.701
23	9 39 16.83	2.3108	11 42 25.3	8.759
24	9 41 35.32	2.3054	N.11 33 38.0	8.816

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 41 35.32	2.3054	N.11 33 38.0	8.816
1	9 43 53.49	2.3000	11 24 47.3	8.873
2	9 46 11.33	2.2947	11 15 53.3	8.928
3	9 48 28.85	2.2894	11 6 56.0	8.981
4	9 50 46.06	2.2841	10 57 55.6	9.033
5	9 53 2.95	2.2788	10 48 52.0	9.085
6	9 55 19.52	2.2736	10 39 45.4	9.135
7	9 57 35.79	2.2685	10 30 35.8	9.184
8	9 59 51.74	2.2633	10 21 23.3	9.232
9	10 2 7.38	2.2582	10 12 8.0	9.278
10	10 4 22.72	2.2531	10 2 49.9	9.325
11	10 6 37.76	2.2481	9 53 29.1	9.368
12	10 8 52.49	2.2431	9 44 5.7	9.411
13	10 11 6.92	2.2381	9 34 39.7	9.453
14	10 13 21.06	2.2332	9 25 11.3	9.494
15	10 15 34.90	2.2283	9 15 40.4	9.534
16	10 17 48.45	2.2234	9 6 7.2	9.573
17	10 20 1.70	2.2186	8 56 31.7	9.610
18	10 22 14.67	2.2137	8 46 54.0	9.647
19	10 24 27.35	2.2090	8 37 14.1	9.683
20	10 26 39.75	2.2043	8 27 32.1	9.717
21	10 28 51.87	2.1997	8 17 48.1	9.750
22	10 31 3.71	2.1950	8 8 2.1	9.782
23	10 33 15.27	2.1904	N. 7 58 14.2	9.813

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 35 26.56	2.1859	N. 7 48 24.5	9.843
1	10 37 37.58	2.1814	7 38 33.0	9.873
2	10 39 48.33	2.1770	7 28 39.8	9.901
3	10 41 58.82	2.1727	7 18 45.0	9.927
4	10 44 9.05	2.1683	7 8 48.6	9.953
5	10 46 19.02	2.1640	6 58 50.7	9.978
6	10 48 28.73	2.1598	6 48 51.3	10.001
7	10 50 38.19	2.1555	6 38 50.6	10.023
8	10 52 47.40	2.1512	6 28 48.5	10.045
9	10 54 56.36	2.1473	6 18 45.2	10.066
10	10 57 5.08	2.1433	6 8 40.6	10.086
11	10 59 13.55	2.1393	5 58 34.9	10.105
12	11 1 21.79	2.1353	5 48 28.0	10.123
13	11 3 29.79	2.1314	5 38 20.1	10.140
14	11 5 37.56	2.1276	5 28 11.2	10.156
15	11 7 45.10	2.1238	5 18 1.3	10.172
16	11 9 52.42	2.1201	5 7 50.6	10.186
17	11 11 59.52	2.1164	4 57 39.0	10.199
18	11 14 6.39	2.1128	4 47 26.7	10.211
19	11 16 13.05	2.1092	4 37 13.6	10.223
20	11 18 19.49	2.1057	4 26 59.9	10.234
21	11 20 25.72	2.1022	4 16 45.5	10.244
22	11 22 31.75	2.0988	4 6 30.6	10.253
23	11 24 37.57	2.0953	3 56 15.2	10.261
24	11 26 43.19	2.0920	N. 3 45 59.3	10.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 26 43.19	2.0920	N. 3 45 59.3	10.268
1	11 28 48.61	2.0888	3 35 43.0	10.274
2	11 30 53.84	2.0856	3 25 26.4	10.279
3	11 32 58.88	2.0824	3 15 9.5	10.283
4	11 35 3.73	2.0793	3 4 52.4	10.287
5	11 37 8.40	2.0763	2 54 35.1	10.290
6	11 39 12.88	2.0733	2 44 17.6	10.292
7	11 41 17.18	2.0703	2 34 0.0	10.293
8	11 43 21.31	2.0674	2 23 42.4	10.293
9	11 45 25.27	2.0645	2 13 24.8	10.293
10	11 47 29.05	2.0617	2 3 7.2	10.292
11	11 49 32.67	2.0589	1 52 49.7	10.290
12	11 51 36.12	2.0563	1 42 32.4	10.288
13	11 53 39.42	2.0537	1 32 15.2	10.284
14	11 55 42.56	2.0511	1 21 58.3	10.279
15	11 57 45.55	2.0485	1 11 41.7	10.274
16	11 59 48.38	2.0461	1 1 25.4	10.268
17	12 1 51.07	2.0437	0 51 9.4	10.262
18	12 3 53.62	2.0413	0 40 53.9	10.255
19	12 5 56.02	2.0389	0 30 38.9	10.247
20	12 7 58.29	2.0367	0 20 24.3	10.238
21	12 10 0.43	2.0345	N. 0 10 10.3	10.229
22	12 12 2.43	2.0323	S. 0 0 3.2	10.219
23	12 14 4.30	2.0302	S. 0 10 16.0	10.208

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 16 6.05	2.0282	S. 0 20 28.1	10.196
1	12 18 7.68	2.0262	0 30 39.5	10.183
2	12 20 9.19	2.0242	0 40 50.1	10.170
3	12 22 10.59	2.0223	0 50 59.9	10.157
4	12 24 11.87	2.0205	1 1 8.9	10.143
5	12 26 13.04	2.0187	1 11 17.0	10.127
6	12 28 14.11	2.0169	1 21 24.1	10.111
7	12 30 15.07	2.0152	1 31 30.3	10.094
8	12 32 15.93	2.0135	1 41 35.4	10.077
9	12 34 16.69	2.0119	1 51 39.5	10.059
10	12 36 17.36	2.0103	2 1 42.5	10.041
11	12 38 17.93	2.0088	2 11 44.4	10.022
12	12 40 18.42	2.0074	2 21 45.1	10.002
13	12 42 18.82	2.0060	2 31 44.6	9.981
14	12 44 19.14	2.0046	2 41 42.8	9.960
15	12 46 19.38	2.0033	2 51 39.8	9.938
16	12 48 19.54	2.0020	3 1 35.4	9.916
17	12 50 19.63	2.0008	3 11 29.6	9.892
18	12 52 19.64	1.9997	3 21 22.4	9.868
19	12 54 19.59	1.9986	3 31 13.8	9.844
20	12 56 19.47	1.9975	3 41 3.7	9.819
21	12 58 19.29	1.9964	3 50 52.1	9.793
22	13 0 19.04	1.9954	4 0 38.9	9.767
23	13 2 18.74	1.9945	4 10 24.1	9.740
24	13 4 18.38	1.9936	S. 4 20 7.7	9.712

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 4 18.38	1.9936	S. 4 20 7.7	9.712
1	13 6 17.97	1.9928	4 29 49.6	9.684
2	13 8 17.51	1.9920	4 39 29.8	9.656
3	13 10 17.00	1.9912	4 49 8.3	9.627
4	13 12 16.45	1.9905	4 58 45.0	9.597
5	13 14 15.86	1.9898	5 8 19.9	9.566
6	13 16 15.23	1.9892	5 17 52.9	9.535
7	13 18 14.56	1.9886	5 27 24.1	9.503
8	13 20 13.86	1.9880	5 36 53.3	9.471
9	13 22 13.12	1.9875	5 46 20.6	9.438
10	13 24 12.36	1.9871	5 55 45.9	9.405
11	13 26 11.57	1.9867	6 5 9.2	9.371
12	13 28 10.76	1.9863	6 14 30.4	9.336
13	13 30 9.93	1.9860	6 23 49.5	9.301
14	13 32 9.07	1.9856	6 33 6.5	9.265
15	13 34 8.20	1.9853	6 42 21.3	9.229
16	13 36 7.31	1.9851	6 51 34.0	9.192
17	13 38 6.41	1.9849	7 0 44.4	9.154
18	13 40 5.50	1.9848	7 9 52.5	9.116
19	13 42 4.58	1.9847	7 18 58.4	9.078
20	13 44 3.66	1.9846	7 28 1.9	9.039
21	13 46 2.73	1.9845	7 37 3.1	8.999
22	13 48 1.80	1.9845	7 46 1.8	8.959
23	13 50 0.87	1.9846	S. 7 54 58.1	8.918

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 51 59.95	1.9847	S. 8 3 51.9	8.876
1	13 53 59.03	1.9848	8 12 43.2	8.833
2	13 55 58.12	1.9849	8 21 31.9	8.791
3	13 57 57.21	1.9850	8 30 18.1	8.748
4	13 59 56.32	1.9852	8 39 1.7	8.705
5	14 1 55.44	1.9855	8 47 42.7	8.661
6	14 3 54.58	1.9857	8 56 21.0	8.617
7	14 5 53.73	1.9860	9 4 56.7	8.572
8	14 7 52.90	1.9864	9 13 29.6	8.526
9	14 9 52.09	1.9868	9 21 59.8	8.479
10	14 11 51.31	1.9871	9 30 27.2	8.433
11	14 13 50.55	1.9875	9 38 51.8	8.386
12	14 15 49.81	1.9879	9 47 13.6	8.338
13	14 17 49.10	1.9884	9 55 32.4	8.290
14	14 19 48.42	1.9889	10 3 48.3	8.241
15	14 21 47.77	1.9894	10 12 1.3	8.192
16	14 23 47.15	1.9900	10 20 11.3	8.142
17	14 25 46.57	1.9906	10 28 18.3	8.091
18	14 27 46.02	1.9912	10 36 22.2	8.040
19	14 29 45.51	1.9918	10 44 23.1	7.989
20	14 31 45.03	1.9925	10 52 20.9	7.937
21	14 33 44.60	1.9932	11 0 15.5	7.884
22	14 35 44.21	1.9939	11 8 7.0	7.831
23	14 37 43.86	1.9946	11 15 55.3	7.777
24	14 39 43.56	1.9953	S. 11 23 40.3	7.723

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 39 43.56	1.9953	S. 11 23 40.3	7.723
1	14 41 43.30	1.9961	11 31 22.1	7.669
2	14 43 43.09	1.9969	11 39 0.6	7.614
3	14 45 42.93	1.9978	11 46 35.8	7.559
4	14 47 42.82	1.9986	11 54 7.7	7.503
5	14 49 42.76	1.9994	12 1 36.2	7.447
6	14 51 42.75	2.0002	12 9 1.4	7.390
7	14 53 42.79	2.0011	12 16 23.1	7.333
8	14 55 42.88	2.0020	12 23 41.3	7.275
9	14 57 43.03	2.0029	12 30 56.1	7.217
10	14 59 43.23	2.0038	12 38 7.3	7.158
11	15 1 43.49	2.0048	12 45 15.0	7.099
12	15 3 43.81	2.0058	12 52 19.2	7.039
13	15 5 44.19	2.0068	12 59 19.8	6.979
14	15 7 44.62	2.0078	13 6 16.8	6.918
15	15 9 45.11	2.0088	13 13 10.0	6.857
16	15 11 45.67	2.0098	13 19 59.6	6.796
17	15 13 46.29	2.0108	13 26 45.5	6.733
18	15 15 46.97	2.0118	13 33 27.6	6.671
19	15 17 47.71	2.0129	13 40 6.0	6.608
20	15 19 48.52	2.0139	13 46 40.5	6.544
21	15 21 49.39	2.0150	13 53 11.2	6.480
22	15 23 50.32	2.0161	13 59 38.1	6.416
23	15 25 51.32	2.0173	S. 14 6 1.1	6.351

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 27 52.39	2.0183	S. 14 12 20.1	6.286
1	15 29 53.52	2.0194	14 18 35.3	6.220
2	15 31 54.72	2.0206	14 24 46.5	6.154
3	15 33 55.99	2.0217	14 30 53.8	6.088
4	15 35 57.32	2.0227	14 36 57.0	6.021
5	15 37 58.72	2.0238	14 42 56.2	5.953
6	15 40 0.18	2.0250	14 48 51.4	5.885
7	15 42 1.72	2.0262	14 54 42.5	5.817
8	15 44 3.32	2.0273	15 0 29.5	5.748
9	15 46 4.99	2.0284	15 6 12.3	5.679
10	15 48 6.73	2.0296	15 11 51.0	5.610
11	15 50 8.54	2.0307	15 17 25.5	5.540
12	15 52 10.41	2.0318	15 22 55.9	5.470
13	15 54 12.35	2.0329	15 28 22.0	5.399
14	15 56 14.36	2.0341	15 33 43.8	5.328
15	15 58 16.44	2.0353	15 39 1.4	5.257
16	16 0 18.59	2.0364	15 44 14.7	5.185
17	16 2 20.81	2.0375	15 49 23.7	5.113
18	16 4 23.09	2.0386	15 54 28.3	5.041
19	16 6 25.44	2.0398	15 59 28.5	4.968
20	16 8 27.86	2.0409	16 4 24.4	4.895
21	16 10 30.34	2.0419	16 9 15.9	4.821
22	16 12 32.89	2.0430	16 14 2.9	4.747
23	16 14 35.51	2.0442	16 18 45.4	4.672
24	16 16 38.19	2.0453	S. 16 23 23.5	4.598

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 16 38.19	2.0453	S. 16 23 23.5	4.598
1	16 18 40.93	2.0463	16 27 57.1	4.523
2	16 20 43.74	2.0473	16 32 26.2	4.448
3	16 22 46.61	2.0484	16 36 50.8	4.372
4	16 24 49.55	2.0494	16 41 10.8	4.296
5	16 26 52.55	2.0505	16 45 26.3	4.219
6	16 28 55.61	2.0515	16 49 37.1	4.142
7	16 30 58.73	2.0526	16 53 43.3	4.065
8	16 33 1.92	2.0536	16 57 44.9	3.988
9	16 35 5.16	2.0546	17 1 41.9	3.911
10	16 37 8.47	2.0556	17 5 34.2	3.833
11	16 39 11.83	2.0566	17 9 21.8	3.754
12	16 41 15.26	2.0576	17 13 4.7	3.676
13	16 43 18.75	2.0586	17 16 42.9	3.597
14	16 45 22.29	2.0595	17 20 16.4	3.518
15	16 47 25.89	2.0604	17 23 45.1	3.438
16	16 49 29.54	2.0614	17 27 9.0	3.359
17	16 51 33.25	2.0623	17 30 28.1	3.279
18	16 53 37.01	2.0632	17 33 42.5	3.199
19	16 55 40.82	2.0640	17 36 52.1	3.119
20	16 57 44.69	2.0649	17 39 56.8	3.039
21	16 59 48.61	2.0657	17 42 56.7	2.958
22	17 1 52.57	2.0665	17 45 51.7	2.877
23	17 3 56.58	2.0672	S. 17 48 41.7	2.796

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 6 0.63	2.0680	S. 17 51 27.0	2.714
1	17 8 4.73	2.0687	17 54 7.4	2.632
2	17 10 8.87	2.0694	17 56 42.8	2.550
3	17 12 13.05	2.0701	17 59 13.3	2.467
4	17 14 17.28	2.0708	18 1 38.8	2.385
5	17 16 21.55	2.0714	18 3 59.4	2.302
6	17 18 25.85	2.0721	18 6 15.0	2.220
7	17 20 30.19	2.0727	18 8 25.7	2.137
8	17 22 34.57	2.0733	18 10 31.4	2.054
9	17 24 38.98	2.0738	18 12 32.1	1.970
10	17 26 43.43	2.0744	18 14 27.8	1.887
11	17 28 47.91	2.0750	18 16 18.5	1.803
12	17 30 52.43	2.0755	18 18 4.1	1.719
13	17 32 56.98	2.0760	18 19 44.7	1.635
14	17 35 1.55	2.0764	18 21 20.3	1.552
15	17 37 6.15	2.0768	18 22 50.9	1.468
16	17 39 10.77	2.0772	18 24 16.4	1.384
17	17 41 15.42	2.0777	18 25 36.9	1.299
18	17 43 20.09	2.0781	18 26 52.3	1.215
19	17 45 24.78	2.0784	18 28 2.6	1.130
20	17 47 29.50	2.0788	18 29 7.9	1.046
21	17 49 34.24	2.0791	18 30 8.1	0.961
22	17 51 38.99	2.0794	18 31 3.2	0.877
23	17 53 43.76	2.0796	18 31 53.2	0.792
24	17 55 48.54	2.0798	S. 18 32 38.2	0.707

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 55 48.54	2.0798	S. 18 32 38.2	0.707
1	17 57 53.33	2.0800	18 33 18.0	0.622
2	17 59 58.14	2.0802	18 33 52.8	0.537
3	18 2 2.96	2.0803	18 34 22.4	0.451
4	18 4 7.78	2.0805	18 34 46.9	0.366
5	18 6 12.61	2.0806	18 35 6.3	0.281
6	18 8 17.45	2.0806	18 35 20.6	0.196
7	18 10 22.29	2.0807	18 35 29.8	0.110
8	18 12 27.13	2.0807	18 35 33.8	0.025
9	18 14 31.97	2.0807	18 35 32.8	0.060
10	18 16 36.81	2.0806	18 35 26.6	0.146
11	18 18 41.65	2.0806	18 35 15.3	0.231
12	18 20 46.48	2.0805	18 34 58.9	0.316
13	18 22 51.31	2.0804	18 34 37.4	0.401
14	18 24 56.13	2.0803	18 34 10.8	0.486
15	18 27 0.95	2.0802	18 33 39.1	0.571
16	18 29 5.75	2.0800	18 33 2.3	0.656
17	18 31 10.54	2.0798	18 32 20.4	0.741
18	18 33 15.32	2.0796	18 31 33.4	0.826
19	18 35 20.09	2.0793	18 30 41.3	0.910
20	18 37 24.84	2.0790	18 29 44.2	0.995
21	18 39 29.57	2.0787	18 28 41.9	1.080
22	18 41 34.28	2.0784	18 27 34.6	1.165
23	18 43 38.98	2.0781	S. 18 26 22.2	1.249

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 45 43.65	2.0777	S. 18 25 4.7	1.334
1	18 47 48.30	2.0773	18 23 42.2	1.418
2	18 49 52.93	2.0769	18 22 14.6	1.503
3	18 51 57.53	2.0765	18 20 41.9	1.587
4	18 54 2.11	2.0761	18 19 4.2	1.671
5	18 56 6.66	2.0756	18 17 21.5	1.755
6	18 58 11.18	2.0751	18 15 33.7	1.839
7	19 0 15.67	2.0746	18 13 40.9	1.922
8	19 2 20.12	2.0740	18 11 43.1	2.005
9	19 4 24.54	2.0734	18 9 40.3	2.088
10	19 6 28.93	2.0729	18 7 32.5	2.171
11	19 8 33.28	2.0723	18 5 19.7	2.254
12	19 10 37.60	2.0717	18 3 2.0	2.337
13	19 12 41.88	2.0710	18 0 39.3	2.420
14	19 14 46.12	2.0703	17 58 11.6	2.502
15	19 16 50.32	2.0696	17 55 39.0	2.584
16	19 18 54.47	2.0689	17 53 1.5	2.666
17	19 20 58.58	2.0682	17 50 19.1	2.748
18	19 23 2.65	2.0675	17 47 31.7	2.830
19	19 25 6.68	2.0668	17 44 39.5	2.911
20	19 27 10.66	2.0661	17 41 42.4	2.992
21	19 29 14.60	2.0653	17 38 40.5	3.073
22	19 31 18.49	2.0645	17 35 33.7	3.154
23	19 33 22.33	2.0636	17 32 22.1	3.234
24	19 35 26.12	2.0628	S. 17 29 5.6	3.314

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 35 26.12	2.0628	S. 17 29 5.6	3.314
1	19 37 29.86	2.0619	17 25 44.3	3.394
2	19 39 33.55	2.0611	17 22 18.3	3.474
3	19 41 37.19	2.0603	17 18 47.5	3.553
4	19 43 40.78	2.0594	17 15 11.9	3.632
5	19 45 44.31	2.0584	17 11 31.6	3.711
6	19 47 47.79	2.0576	17 7 46.5	3.790
7	19 49 51.22	2.0567	17 3 56.8	3.868
8	19 51 54.59	2.0558	17 0 2.3	3.947
9	19 53 57.91	2.0548	16 56 3.1	4.025
10	19 56 1.17	2.0539	16 51 59.3	4.102
11	19 58 4.37	2.0529	16 47 50.9	4.179
12	20 0 7.52	2.0520	16 43 37.8	4.256
13	20 2 10.61	2.0510	16 39 20.1	4.333
14	20 4 13.64	2.0501	16 34 57.8	4.409
15	20 6 16.61	2.0491	16 30 31.0	4.485
16	20 8 19.53	2.0481	16 25 59.6	4.561
17	20 10 22.39	2.0471	16 21 23.7	4.636
18	20 12 25.18	2.0461	16 16 43.3	4.711
19	20 14 27.92	2.0451	16 11 58.4	4.786
20	20 16 30.59	2.0441	16 7 9.0	4.860
21	20 18 33.21	2.0431	16 2 15.2	4.934
22	20 20 35.76	2.0421	15 57 17.0	5.008
23	20 22 38.25	2.0410	S. 15 52 14.3	5.081

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 24 40.68	2.0400	S. 15 47 7.3	5.154
1	20 26 43.05	2.0390	15 41 55.9	5.226
2	20 28 45.36	2.0380	15 36 40.1	5.298
3	20 30 47.61	2.0370	15 31 20.0	5.370
4	20 32 49.80	2.0360	15 25 55.7	5.442
5	20 34 51.93	2.0350	15 20 27.0	5.513
6	20 36 54.00	2.0340	15 14 54.1	5.584
7	20 38 56.01	2.0330	15 9 17.0	5.654
8	20 40 57.96	2.0320	15 3 35.6	5.724
9	20 42 59.85	2.0310	14 57 50.0	5.794
10	20 45 1.68	2.0300	14 52 0.3	5.864
11	20 47 3.45	2.0291	14 46 6.4	5.933
12	20 49 5.17	2.0281	14 40 8.4	6.001
13	20 51 6.82	2.0271	14 34 6.3	6.069
14	20 53 8.42	2.0262	14 28 0.1	6.136
15	20 55 9.96	2.0252	14 21 49.9	6.203
16	20 57 11.45	2.0243	14 15 35.7	6.270
17	20 59 12.88	2.0233	14 9 17.5	6.337
18	21 1 14.25	2.0224	14 2 55.3	6.403
19	21 3 15.57	2.0216	13 56 29.2	6.468
20	21 5 16.84	2.0207	13 49 59.2	6.533
21	21 7 18.05	2.0198	13 43 25.3	6.597
22	21 9 19.21	2.0189	13 36 47.5	6.661
23	21 11 20.32	2.0180	13 30 5.9	6.725
24	21 13 21.37	2.0172	S, 13 23 20.4	6.788

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 13 21.37	2.0172	S. 13 23 20.4	6.790
1	21 15 22.37	2.0164	13 16 31.1	6.853
2	21 17 23.33	2.0156	13 9 38.1	6.915
3	21 19 24.24	2.0148	13 2 41.4	6.977
4	21 21 25.10	2.0140	12 55 40.9	7.039
5	21 23 25.91	2.0132	12 48 36.7	7.101
6	21 25 26.68	2.0125	12 41 28.8	7.162
7	21 27 27.41	2.0118	12 34 17.3	7.222
8	21 29 28.09	2.0110	12 27 2.2	7.282
9	21 31 28.73	2.0103	12 19 43.5	7.342
10	21 33 29.32	2.0096	12 12 21.2	7.401
11	21 35 29.88	2.0090	12 4 55.4	7.459
12	21 37 30.40	2.0084	11 57 26.1	7.517
13	21 39 30.88	2.0078	11 49 53.3	7.575
14	21 41 31.33	2.0072	11 42 17.1	7.632
15	21 43 31.75	2.0067	11 34 37.5	7.688
16	21 45 32.13	2.0061	11 26 54.5	7.744
17	21 47 32.48	2.0056	11 19 8.1	7.800
18	21 49 32.80	2.0051	11 11 18.4	7.855
19	21 51 33.09	2.0046	11 3 25.4	7.910
20	21 53 33.35	2.0042	10 55 29.2	7.964
21	21 55 33.59	2.0038	10 47 29.7	8.018
22	21 57 33.80	2.0034	10 39 27.0	8.071
23	21 59 34.00	2.0031	S. 10 31 21.1	8.124

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 1 34.17	2.0027	S. 10 23 12.1	8.177
1	22 3 34.32	2.0023	10 14 59.9	8.229
2	22 5 34.45	2.0021	10 6 44.6	8.280
3	22 7 34.57	2.0019	9 58 26.3	8.331
4	22 9 34.68	2.0018	9 50 4.9	8.382
5	22 11 34.78	2.0017	9 41 40.5	8.432
6	22 13 34.88	2.0016	9 33 13.1	8.482
7	22 15 34.97	2.0015	9 24 42.7	8.531
8	22 17 35.06	2.0013	9 16 9.4	8.579
9	22 19 35.13	2.0012	9 7 33.2	8.627
10	22 21 35.20	2.0012	8 58 54.2	8.674
11	22 23 35.27	2.0012	8 50 12.3	8.721
12	22 25 35.34	2.0013	8 41 27.6	8.767
13	22 27 35.42	2.0013	8 32 40.2	8.813
14	22 29 35.50	2.0015	8 23 50.0	8.859
15	22 31 35.59	2.0017	8 14 57.1	8.904
16	22 33 35.70	2.0019	8 6 1.5	8.948
17	22 35 35.82	2.0021	7 57 3.3	8.992
18	22 37 35.95	2.0024	7 48 2.5	9.035
19	22 39 36.10	2.0027	7 38 59.1	9.078
20	22 41 36.27	2.0030	7 29 53.2	9.120
21	22 43 36.46	2.0034	7 20 44.8	9.161
22	22 45 36.68	2.0038	7 11 33.9	9.202
23	22 47 36.93	2.0042	7 2 20.6	9.243
24	22 49 37.20	2.0046	S. 6 53 4.8	9.283

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 49 37.20	2.0046	S. 6 53 4.8	9.283
1	22 51 37.50	2.0053	6 43 46.7	9.322
2	22 53 37.84	2.0058	6 34 26.2	9.360
3	22 55 38.21	2.0066	6 25 3.4	9.398
4	22 57 38.63	2.0073	6 15 38.4	9.436
5	22 59 39.09	2.0080	6 6 11.1	9.473
6	23 1 39.59	2.0087	5 56 41.5	9.510
7	23 3 40.14	2.0095	5 47 9.8	9.546
8	23 5 40.73	2.0104	5 37 36.0	9.582
9	23 7 41.38	2.0113	5 28 0.0	9.617
10	23 9 42.08	2.0123	5 18 22.0	9.651
11	23 11 42.84	2.0133	5 8 41.9	9.684
12	23 13 43.67	2.0143	4 58 59.9	9.717
13	23 15 44.56	2.0153	4 49 15.9	9.749
14	23 17 45.51	2.0165	4 39 30.0	9.781
15	23 19 46.53	2.0177	4 29 42.2	9.812
16	23 21 47.63	2.0189	4 19 52.5	9.843
17	23 23 48.80	2.0202	4 10 1.0	9.873
18	23 25 50.05	2.0215	4 0 7.7	9.902
19	23 27 51.37	2.0228	3 50 12.7	9.931
20	23 29 52.78	2.0242	3 40 16.0	9.959
21	23 31 54.27	2.0256	3 30 17.6	9.987
22	23 33 55.85	2.0271	3 20 17.6	10.014
23	23 35 57.52	2.0287	S. 3 10 16.0	10.040

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 37 59.29	2.0303	S. 3 0 12.9	10.065
1	23 40 1.15	2.0319	2 50 8.2	10.090
2	23 42 3.12	2.0336	2 40 2.1	10.114
3	23 44 5.19	2.0353	2 29 54.5	10.137
4	23 46 7.36	2.0371	2 19 45.6	10.160
5	23 48 9.64	2.0389	2 9 35.3	10.183
6	23 50 12.03	2.0408	1 59 23.7	10.204
7	23 52 14.54	2.0428	1 49 10.8	10.225
8	23 54 17.17	2.0448	1 38 56.7	10.245
9	23 56 19.92	2.0468	1 28 41.4	10.265
10	23 58 22.79	2.0490	1 18 24.9	10.283
11	0 0 25.79	2.0512	1 8 7.4	10.301
12	0 2 28.93	2.0534	0 57 48.8	10.318
13	0 4 32.20	2.0556	0 47 29.2	10.335
14	0 6 35.60	2.0579	0 37 8.6	10.350
15	0 8 39.14	2.0603	0 26 47.1	10.365
16	0 10 42.83	2.0627	0 16 24.8	10.379
17	0 12 46.66	2.0652	S. 0 6 1.6	10.393
18	0 14 50.65	2.0677	N. 0 4 22.4	10.406
19	0 16 54.79	2.0703	0 14 47.1	10.418
20	0 18 59.08	2.0729	0 25 12.6	10.429
21	0 21 3.53	2.0756	0 35 38.7	10.440
22	0 23 8.15	2.0784	0 46 5.4	10.450
23	0 25 12.94	2.0812	0 56 32.6	10.458
24	0 27 17.89	2.0840	N. 1 7 0.4	10.466

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 25.					**THURSDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 27 17.89	2.0840	N. 1 7 0.4	10.466	0	2 11 36.23	2.2810	N. 9 21 26.7	9.743
1	0 29 23.01	2.0868	1 17 28.6	10.474	1	2 13 53.24	2.2862	9 31 10.0	9.701
2	0 31 28.31	2.0896	1 27 57.3	10.481	2	2 16 10.59	2.2914	9 40 50.8	9.657
3	0 33 33.79	2.0928	1 38 26.3	10.486	3	2 18 28.21	2.2966	9 50 28.9	9.612
4	0 35 39.45	2.0960	1 48 55.6	10.491	4	2 20 46.16	2.3019	10 0 4.3	9.566
5	0 37 45.30	2.0990	1 59 25.2	10.495	5	2 23 4.43	2.3073	10 9 36.9	9.519
6	0 39 51.33	2.1022	2 9 55.0	10.498	6	2 25 23.03	2.3126	10 19 6.6	9.471
7	0 41 57.56	2.1054	2 20 24.9	10.501	7	2 27 41.94	2.3179	10 28 33.4	9.422
8	0 44 3.98	2.1087	2 30 55.0	10.502	8	2 30 1.18	2.3233	10 37 57.2	9.371
9	0 46 10.60	2.1120	2 41 25.1	10.503	9	2 32 20.74	2.3288	10 47 17.8	9.318
10	0 48 17.42	2.1154	2 51 55.3	10.502	10	2 34 40.63	2.3343	10 56 35.3	9.264
11	0 50 24.45	2.1188	3 2 25.4	10.501	11	2 37 0.85	2.3398	11 5 49.6	9.210
12	0 52 31.68	2.1223	3 12 55.3	10.498	12	2 39 21.40	2.3453	11 15 0.5	9.154
13	0 54 39.13	2.1259	3 23 25.1	10.495	13	2 41 42.28	2.3508	11 24 8.0	9.096
14	0 56 46.79	2.1295	3 33 54.7	10.491	14	2 44 3.49	2.3563	11 33 12.0	9.037
15	0 58 54.66	2.1331	3 44 24.0	10.486	15	2 46 25.03	2.3618	11 42 12.5	8.978
16	1 1 2.76	2.1368	3 54 53.0	10.480	16	2 48 46.90	2.3673	11 51 9.3	8.917
17	1 3 11.08	2.1406	4 5 21.6	10.473	17	2 51 9.11	2.3729	12 0 2.4	8.853
18	1 5 19.63	2.1444	4 15 49.8	10.466	18	2 53 31.65	2.3785	12 8 51.7	8.788
19	1 7 28.40	2.1482	4 26 17.5	10.457	19	2 55 54.53	2.3841	12 17 37.0	8.723
20	1 9 37.41	2.1521	4 36 44.6	10.448	20	2 58 17.74	2.3897	12 26 18.5	8.657
21	1 11 46.65	2.1561	4 47 11.1	10.437	21	3 0 41.29	2.3953	12 34 55.9	8.589
22	1 13 56.14	2.1601	4 57 37.0	10.425	22	3 3 5.17	2.4009	12 43 29.2	8.519
23	1 16 5.87	2.1642	N. 5 8 2.1	10.412	23	3 5 29.39	2.4066	N.12 51 58.2	8.447
	WEDNESDAY 26.					**FRIDAY 28.**			
0	1 18 15.84	2.1683	N. 5 18 26.5	10.398	0	3 7 33.95	2.4121	N.13 0 22.9	8.374
1	1 20 26.06	2.1725	5 28 50.0	10.384	1	3 10 18.85	2.4176	13 8 43.2	8.301
2	1 22 36.54	2.1767	5 39 12.6	10.368	2	3 12 44.08	2.4232	13 16 59.0	8.226
3	1 24 47.27	2.1809	5 49 34.2	10.351	3	3 15 9.65	2.4289	13 25 10.3	8.149
4	1 26 58.25	2.1852	5 59 54.7	10.333	4	3 17 35.55	2.4345	13 33 16.9	8.071
5	1 29 9.49	2.1896	6 10 14.1	10.314	5	3 20 1.79	2.4402	13 41 18.8	7.992
6	1 31 21.00	2.1940	6 20 32.4	10.294	6	3 22 28.37	2.4457	13 49 15.9	7.911
7	1 33 32.78	2.1985	6 30 49.4	10.273	7	3 24 55.28	2.4513	13 57 8.1	7.829
8	1 35 44.82	2.2030	6 41 5.2	10.251	8	3 27 22.53	2.4568	14 4 55.4	7.746
9	1 37 57.13	2.2075	6 51 19.6	10.228	9	3 29 50.11	2.4624	14 12 37.6	7.661
10	1 40 9.72	2.2121	7 1 32.6	10.203	10	3 32 18.02	2.4679	14 20 14.7	7.576
11	1 42 22.58	2.2168	7 11 44.1	10.178	11	3 34 46.26	2.4734	14 27 46.5	7.487
12	1 44 35.73	2.2215	7 21 54.0	10.152	12	3 37 14.83	2.4789	14 35 13.1	7.398
13	1 46 49.16	2.2262	7 32 2.3	10.125	13	3 39 43.73	2.4843	14 42 34.3	7.308
14	1 49 2.87	2.2310	7 42 9.0	10.096	14	3 42 12.95	2.4897	14 49 50.0	7.216
15	1 51 16.87	2.2358	7 52 13.9	10.066	15	3 44 42.50	2.4952	14 57 0.2	7.123
16	1 53 31.16	2.2406	8 2 16.9	10.035	16	3 47 12.37	2.5006	15 4 4.7	7.029
17	1 55 45.74	2.2455	8 12 18.0	10.003	17	3 49 42.56	2.5058	15 11 3.5	6.933
18	1 58 0.62	2.2505	8 22 17.2	9.969	18	3 52 13.07	2.5111	15 17 56.6	6.836
19	2 0 15.80	2.2555	8 32 14.3	9.934	19	3 54 43.90	2.5164	15 24 43.8	6.737
20	2 2 31.28	2.2605	8 42 9.3	9.898	20	3 57 15.04	2.5216	15 31 25.0	6.637
21	2 4 47.06	2.2655	8 52 2.1	9.861	21	3 59 46.49	2.5268	15 38 0.3	6.536
22	2 7 3.14	2.2706	9 1 52.7	9.823	22	4 2 18.25	2.5319	15 44 29.4	6.434
23	2 9 19.53	2.2758	9 11 40.9	9.783	23	4 4 50.32	2.5370	15 50 52.3	6.330
24	2 11 36.23	2.2810	N. 9 21 26.7	9.743	24	4 7 22.69	2.5420	N.15 57 9.0	6.225

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 29.					SUNDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 7 22.69	2.5420	N.15 57 9.0	6.226	0	5 9 40.56	2.6419	N.17 53 24.2	3.359
1	4 9 55.36	2.5469	16 3 19.3	6.218	1	5 12 19.17	2.6449	17 56 41.8	3.228
2	4 12 28.32	2.5518	16 9 23.2	6.010	2	5 14 57.95	2.6478	17 59 51.5	3.096
3	4 15 1.57	2.5567	16 15 20.6	5.902	3	5 17 36.91	2.6507	18 2 53.2	2.962
4	4 17 35.12	2.5616	16 21 11.4	5.792	4	5 20 16.03	2.6534	18 5 46.9	2.828
5	4 20 8.96	2.5664	16 26 55.6	5.681	5	5 22 55.31	2.6560	18 8 32.5	2.693
6	4 22 43.09	2.5711	16 32 33.1	5.569	6	5 25 34.75	2.6584	18 11 10.0	2.558
7	4 25 17.50	2.5758	16 38 3.8	5.455	7	5 28 14.33	2.6608	18 13 39.4	2.422
8	4 27 52.18	2.5802	16 43 27.7	5.340	8	5 30 54.05	2.6631	18 16 0.6	2.285
9	4 30 27.12	2.5846	16 48 44.6	5.224	9	5 33 33.91	2.6653	18 18 13.6	2.148
10	4 33 2.33	2.5890	16 53 54.6	5.107	10	5 36 13.89	2.6673	18 20 18.3	2.010
11	4 35 37.80	2.5933	16 58 57.6	4.989	11	5 38 53.99	2.6693	18 22 14.8	1.872
12	4 38 13.52	2.5976	17 3 53.4	4.870	12	5 41 34.20	2.6711	18 24 3.0	1.733
13	4 40 49.50	2.6018	17 8 42.0	4.749	13	5 44 14.52	2.6728	18 25 42.8	1.594
14	4 43 25.74	2.6059	17 13 23.3	4.628	14	5 46 54.94	2.6743	18 27 14.3	1.455
15	4 46 2.22	2.6099	17 17 57.3	4.506	15	5 49 35.44	2.6758	18 28 37.4	1.316
16	4 48 38.93	2.6138	17 22 24.0	4.383	16	5 52 16.03	2.6771	18 29 52.1	1.175
17	4 51 15.88	2.6177	17 26 43.2	4.258	17	5 54 56.69	2.6783	18 30 58.4	1.034
18	4 53 53.05	2.6214	17 30 54.7	4.132	18	5 57 37.42	2.6793	18 31 56.2	0.893
19	4 56 30.45	2.6251	17 34 58.8	4.006	19	6 0 18.21	2.6803	18 32 45.5	0.752
20	4 59 8.06	2.6286	17 38 55.3	3.877	20	6 2 59.05	2.6811	18 33 26.4	0.610
21	5 1 45.88	2.6321	17 42 44.1	3.749	21	6 5 39.94	2.6818	18 33 58.7	0.468
22	5 4 23.91	2.6355	17 46 25.2	3.620	22	6 8 20.86	2.6823	18 34 22.6	0.327
23	5 7 2.14	2.6388	17 49 58.6	3.490	23	6 11 1.81	2.6827	18 34 38.0	0.185
24	5 9 40.56	2.6419	N.17 53 24.2	3.359	24	6 13 42.78	2.6830	N.18 34 44.8	0.043

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	2	3	12.5
☽ First Quarter, ...	8	18	37.3
○ Full Moon, ...	16	16	54.4
☾ Last Quarter, ...	24	17	20.0

	d	h
☾ Perigee, ...	2	17.9
☾ Apogee, ...	17	4.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
4	SUN	W.	27° 1′ 53″	2385	28° 45′ 49″	2386	30° 29′ 45″	2388	32° 13′ 36″	2394
	Regulus	E.	48 12 15	2029	46 19 26	2038	44 26 51	2048	42 34 31	2057
	Spica	E.	101 46 12	2038	99 53 37	2046	98 1 15	2055	96 9 7	2064
5	SUN	W.	40 50 35	2434	42 33 21	2446	44 15 50	2458	45 58 2	2470
	Regulus	E.	33 17 1	2118	31 26 29	2132	29 36 18	2147	27 46 30	2162
	Spica	E.	86 52 21	2120	85 1 53	2134	83 11 45	2147	81 21 57	2161
	Saturn	E.	114 10 51	2090	112 19 36	2102	110 28 40	2116	108 38 4	2129
6	SUN	W.	54 24 19	2543	56 4 33	2559	57 44 25	2574	59 23 55	2591
	Pollux	W.	20 42 20	2897	22 14 43	2816	23 48 50	2758	25 24 19	2706
	Spica	E.	72 18 21	2236	70 30 46	2251	68 43 34	2267	66 56 46	2284
	Saturn	E.	99 30 26	2202	97 42 1	2217	95 53 59	2233	94 6 21	2249
	Antares	E.	117 52 28	2293	116 6 19	2309	114 20 31	2322	112 35 2	2336
7	SUN	W.	67 35 41	2677	69 12 52	2694	70 49 40	2712	72 26 4	2729
	Pollux	W.	33 32 45	2608	35 11 29	2604	36 50 19	2601	38 29 12	2601
	Spica	E.	58 8 58	2369	56 24 39	2387	54 40 46	2405	52 57 18	2423
	Saturn	E.	85 14 11	2332	83 28 58	2348	81 44 9	2365	79 59 44	2382
	Antares	E.	103 52 57	2411	102 9 38	2427	100 26 42	2443	98 44 9	2459
8	SUN	W.	80 22 12	2818	81 56 16	2836	83 29 57	2854	85 3 15	2871
	Pollux	W.	46 42 34	2630	48 20 48	2640	49 58 49	2649	51 36 37	2659
	Spica	E.	44 26 25	2516	42 45 32	2533	41 5 4	2551	39 25 2	2570
	Saturn	E.	71 23 41	2465	69 41 39	2482	68 0 1	2498	66 18 45	2514
	Antares	E.	90 17 11	2543	88 36 57	2559	86 57 5	2575	85 17 36	2592
9	SUN	W.	92 44 17	2956	94 15 25	2973	95 46 12	2989	97 16 39	3005
	Pollux	W.	59 42 2	2716	61 18 21	2728	62 54 24	2740	64 30 11	2751
	Mars	W.	28 6 27	2835	29 40 10	2848	31 13 36	2860	32 46 46	2873
	Regulus	W.	22 53 31	2631	24 31 44	2644	26 9 39	2657	27 47 16	2670
	Spica	E.	31 11 30	2671	29 34 11	2692	27 57 20	2713	26 20 58	2736
	Saturn	E.	57 58 3	2594	56 19 0	2610	54 40 18	2624	53 1 55	2640
	Antares	E.	77 5 49	2674	75 28 34	2690	73 51 41	2706	72 15 9	2722
10	SUN	W.	104 44 1	3082	106 12 33	3096	107 40 48	3110	109 8 45	3124
	Pollux	W.	72 25 9	2812	73 59 21	2824	75 33 18	2836	77 7 0	2848
	Mars	W.	40 28 28	2938	42 0 0	2950	43 31 15	2962	45 2 15	2975
	Regulus	W.	35 51 1	2735	37 26 54	2747	39 2 31	2760	40 37 52	2773
	Saturn	E.	44 55 4	2710	43 18 38	2724	41 42 30	2737	40 6 39	2750
	Antares	E.	64 17 44	2801	62 43 17	2815	61 9 9	2831	59 35 21	2846
11	SUN	W.	116 24 25	3190	117 50 46	3203	119 16 52	3215	120 42 43	3226
	Pollux	W.	84 51 47	2903	86 24 2	2913	87 56 4	2924	89 27 52	2935
	Mars	W.	52 33 27	3034	54 2 58	3044	55 32 16	3055	57 1 21	3066
	Regulus	W.	48 30 43	2829	50 4 33	2839	51 38 10	2850	53 11 33	2861
	Saturn	E.	32 11 40	2813	30 37 29	2825	29 3 33	2836	27 29 52	2848
	Antares	E.	51 51 18	2924	50 19 29	2939	48 47 59	2954	47 16 49	2970
12	SUN	W.	127 48 37	3282	129 13 9	3293	130 37 29	3304	132 1 36	3313
	Pollux	W.	97 3 41	2984	98 34 14	2993	100 4 36	3001	101 34 47	3011
	Mars	W.	64 23 37	3114	65 51 30	3123	67 19 12	3131	68 46 43	3140
	Regulus	W.	60 55 17	2907	62 27 27	2916	63 59 26	2924	65 31 14	2932
	Antares	E.	39 46 8	3066	38 17 5	3076	36 48 26	3086	35 20 12	3119
	α Aquilæ	E.	89 18 52	3347	87 55 35	3357	86 32 29	3366	85 9 34	3377

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
4	SUN	W.	33° 57′ 20″	2399	35° 40′ 56″	2407	37° 24′ 21″	2415	39° 7′ 35″	2424
	Regulus	E.	40 42 26	2068	38 50 38	2079	36 59 7	2091	35 7 54	2104
	Spica	E.	94 17 13	2076	92 25 35	2086	90 34 13	2096	88 43 8	2108
5	SUN	W.	47 39 57	2486	49 21 32	2498	51 2 48	2512	52 43 44	2527
	Regulus	E.	25 57 5	2178	24 8 5	2195	22 19 30	2213	20 31 22	2233
	Spica	E.	79 32 30	2175	77 43 25	2189	75 54 41	2204	74 6 20	2219
	Saturn	E.	106 47 49	2143	104 57 55	2157	103 8 23	2172	101 19 13	2187
6	SUN	W.	61 3 2	2607	62 41 47	2626	64 20 8	2642	65 58 6	2659
	Pollux	W.	27 0 51	2672	28 38 9	2648	30 15 59	2630	31 54 13	2617
	Spica	E.	65 10 23	2301	63 24 25	2317	61 38 51	2335	59 53 42	2352
	Saturn	E.	92 19 7	2266	90 32 17	2282	88 45 51	2298	86 59 49	2315
	Antares	E.	110 49 54	2350	109 5 7	2365	107 20 41	2380	105 36 38	2396
7	SUN	W.	74 2 5	2747	75 37 42	2766	77 12 55	2783	78 47 45	2801
	Pollux	W.	40 8 5	2604	41 46 54	2610	43 25 36	2615	45 4 10	2623
	Spica	E.	51 14 16	2441	49 31 40	2459	47 49 29	2477	46 7 44	2496
	Saturn	E.	78 15 43	2398	76 32 6	2416	74 48 54	2433	73 6 6	2449
	Antares	E.	97 1 59	2476	95 20 12	2493	93 38 49	2509	91 57 48	2526
8	SUN	W.	86 36 11	2888	88 8 45	2905	89 40 57	2922	91 12 48	2939
	Pollux	W.	53 14 12	2670	54 51 32	2681	56 28 37	2692	58 5 27	2704
	Spica	E.	37 45 26	2590	36 6 17	2609	34 27 34	2629	32 49 18	2649
	Saturn	E.	64 37 51	2531	62 57 21	2546	61 17 14	2563	59 37 28	2578
	Antares	E.	83 38 30	2608	81 59 46	2625	80 21 25	2641	78 43 26	2657
9	SUN	W.	98 46 46	3021	100 16 33	3036	101 46 1	3052	103 15 10	3066
	Pollux	W.	66 5 43	2763	67 40 59	2776	69 15 58	2788	70 50 41	2800
	Mars	W.	34 19 40	2886	35 52 17	2899	37 24 37	2912	38 56 41	2924
	Regulus	W.	29 24 36	2684	31 1 38	2696	32 38 23	2709	34 14 51	2722
	Spica	E.	24 45 8	2763	23 9 52	2791	21 35 12	2821	20 1 11	2855
	Saturn	E.	51 23 54	2654	49 46 12	2669	48 8 50	2683	46 31 47	2698
	Antares	E.	70 38 58	2738	69 3 9	2753	67 27 40	2769	65 52 32	2785
10	SUN	W.	110 36 26	3138	112 3 50	3152	113 30 57	3164	114 57 49	3178
	Pollux	W.	78 40 26	2859	80 13 38	2870	81 46 35	2881	83 19 18	2892
	Mars	W.	46 32 59	2987	48 3 28	2999	49 33 42	3010	51 3 42	3022
	Regulus	W.	42 12 57	2784	43 47 46	2795	45 22 20	2807	46 56 39	2818
	Saturn	E.	38 31 6	2763	36 55 50	2775	35 20 50	2788	33 46 7	2801
	Antares	E.	58 1 53	2862	56 28 45	2876	54 55 56	2892	53 23 27	2908
11	SUN	W.	122 8 21	3238	123 33 45	3250	124 58 55	3261	126 23 52	3271
	Pollux	W.	90 59 27	2945	92 30 49	2954	94 1 59	2965	95 32 56	2974
	Mars	W.	58 30 12	3076	59 58 51	3086	61 27 18	3096	62 55 33	3105
	Regulus	W.	54 44 42	2871	56 17 38	2880	57 50 23	2889	59 22 56	2898
	Saturn	E.	25 56 26	2859	24 23 15	2871	22 50 19	2883	21 17 38	2894
	Antares	E.	45 45 59	2987	44 15 30	3003	42 45 21	3021	41 15 34	3038
12	SUN	W.	133 25 32	3324	134 49 16	3333	136 12 49	3343	137 36 11	3352
	Pollux	W.	103 4 46	3020	104 34 34	3028	106 4 12	3037	107 33 39	3047
	Mars	W.	70 14 4	3148	71 41 16	3156	73 8 18	3163	74 35 12	3171
	Regulus	W.	67 2 52	2941	68 34 19	2947	70 5 38	2954	71 36 48	2962
	Antares	E.	33 52 26	3143	32 25 9	3170	30 58 24	3198	29 32 13	3230
	α Aquilæ	E.	83 46 51	3387	82 24 20	3399	81 2 2	3409	79 39 56	3421

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
13	Mars	W.	76° 1′ 56″	3176	77° 28′ 32″	3184	78° 55′ 0″	3191	80° 21′ 20″	3197
	Regulus	W.	73 7 49	2969	74 38 41	2974	76 9 26	2981	77 40 3	2988
	Spica	W.	20 1 25	3087	21 29 51	3080	22 58 25	3073	24 27 7	3069
	a Aquilæ	E.	78 18 3	3433	76 56 24	3446	75 34 59	3458	74 13 48	3471
	Fomalhaut	E.	110 54 4	3359	109 31 1	3356	108 7 57	3356	106 44 52	3356
14	Mars	W.	87 31 14	3225	88 56 53	3230	90 22 27	3235	91 47 55	3239
	Spica	W.	31 51 29	3064	33 20 23	3064	34 49 17	3065	36 18 9	3066
	a Aquilæ	E.	67 31 51	3547	66 12 19	3566	64 53 7	3583	63 34 14	3603
	Fomalhaut	E.	99 49 39	3363	98 26 40	3365	97 3 44	3367	95 40 50	3370
	Jupiter	E.	104 7 41	3028	102 38 3	3033	101 8 30	3037	99 39 3	3041
15	Mars	W.	98 54 0	3259	100 19 0	3262	101 43 56	3265	103 8 48	3268
	Spica	W.	43 42 6	3074	45 10 47	3075	46 39 27	3077	48 8 5	3078
	a Aquilæ	E.	57 5 30	3718	55 49 2	3745	54 33 2	3774	53 17 33	3805
	Fomalhaut	E.	88 47 9	3386	87 24 36	3389	86 2 7	3393	84 39 43	3398
	Jupiter	E.	92 12 59	3059	90 43 59	3061	89 15 2	3065	87 46 9	3067
16	Spica	W.	55 30 49	3084	56 59 18	3086	58 27 45	3087	59 56 11	3087
	Saturn	W.	28 44 55	3053	30 14 2	3055	31 43 7	3056	33 12 10	3056
	a Aquilæ	E.	47 9 7	4006	45 57 33	4056	44 46 49	4111	43 36 58	4172
	Fomalhaut	E.	77 49 2	3424	76 27 13	3430	75 5 30	3437	73 43 55	3443
	Jupiter	E.	80 22 27	3078	78 53 50	3079	77 25 15	3080	75 56 41	3082
	a Pegasi	E.	92 35 24	3323	91 11 39	3324	89 47 55	3325	88 24 13	3326
17	Spica	W.	67 18 12	3089	68 46 35	3088	70 14 59	3088	71 43 23	3089
	Saturn	W.	40 37 22	3056	42 6 23	3056	43 35 24	3059	45 4 24	3057
	Antares	W.	23 5 19	3466	24 26 19	3435	25 48 7	3399	27 10 36	3366
	Fomalhaut	E.	66 58 3	3484	65 37 21	3495	64 16 51	3506	62 56 33	3517
	Jupiter	E.	68 34 12	3085	67 5 44	3086	65 37 17	3085	64 8 49	3085
	a Pegasi	E.	81 26 19	3339	80 2 53	3341	78 39 29	3345	77 16 9	3348
18	Spica	W.	79 5 29	3084	80 33 58	3083	82 2 28	3082	83 31 0	3080
	Saturn	W.	52 29 39	3054	53 58 45	3052	55 27 53	3052	56 57 2	3049
	Antares	W.	34 10 21	3256	35 35 24	3242	37 0 44	3229	38 26 19	3218
	Fomalhaut	E.	56 18 32	3588	54 59 45	3606	53 41 17	3626	52 23 10	3648
	Jupiter	E.	56 46 25	3082	55 17 53	3081	53 49 20	3079	52 20 45	3078
	a Pegasi	E.	70 20 30	3368	68 57 37	3372	67 34 49	3378	66 12 7	3384
19	Spica	W.	90 54 19	3069	92 23 7	3065	93 51 59	3063	95 20 54	3060
	Saturn	W.	64 23 24	3039	65 52 49	3036	67 22 18	3033	68 51 50	3029
	Antares	W.	45 37 23	3169	47 4 9	3160	48 31 6	3153	49 58 12	3144
	Jupiter	E.	44 57 18	3067	43 28 28	3065	41 59 35	3061	40 30 38	3058
	Fomalhaut	E.	45 59 3	3787	44 43 47	3822	43 29 8	3863	42 15 11	3909
	a Pegasi	E.	59 20 27	3420	57 58 33	3429	56 36 49	3439	55 15 17	3451
20	Saturn	W.	76 20 41	3009	77 50 42	3004	79 20 50	2998	80 51 5	2994
	Antares	W.	57 16 2	3107	58 44 3	3101	60 12 12	3092	61 40 31	3085
	Jupiter	E.	33 4 50	3039	31 35 27	3035	30 5 58	3031	28 36 24	3026
	a Pegasi	E.	48 31 13	3526	47 11 18	3546	45 51 45	3568	44 32 36	3594
	a Arietis	E.	90 31 9	3148	89 3 58	3144	87 36 42	3139	86 9 20	3134
	Venus	E.	118 8 57	3495	116 48 27	3489	115 27 51	3484	114 7 9	3477
21	Saturn	W.	88 24 [illegible]	2963	89 55 1	2956	91 26 9	2949	92 57 26	2943
	Antares	W.	69 4 [illegible]	3046	70 33 43	3037	72 3 10	3028	73 32 48	3020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
13	Mars	W.	81° 47′ 33″	3204	83° 13′ 38″	3209	84° 39′ 37″	3214	86° 5′ 29″	3220
	Regulus	W.	79 10 31	2993	80 40 52	2998	82 11 7	3004	83 41 15	3009
	Spica	W.	25 55 54	3065	27 24 46	3064	28 53 40	3063	30 22 35	3064
	a Aquilæ	E.	72 52 52	3486	71 32 12	3500	70 11 48	3515	68 51 41	3531
	Fomalhaut	E.	105 21 48	3356	103 58 44	3359	102 35 41	3360	101 12 39	3362
14	Mars	W.	93 13 18	3244	94 38 35	3247	96 3 48	3252	97 28 56	3255
	Spica	W.	37 47 0	3068	39 15 49	3069	40 44 37	3071	42 13 22	3072
	a Aquilæ	E.	62 15 43	3623	60 57 34	3645	59 39 48	3667	58 22 26	3692
	Fomalhaut	E.	94 17 59	3372	92 55 11	3376	91 32 27	3379	90 9 46	3382
	Jupiter	E.	98 9 41	3045	96 40 24	3048	95 11 11	3052	93 42 3	3056
15	Mars	W.	104 33 37	3271	105 58 22	3273	107 23 5	3276	108 47 45	3278
	Spica	W.	49 36 41	3080	51 5 15	3081	52 33 48	3082	54 2 19	3083
	a Aquilæ	E.	52 2 36	3840	50 48 15	3876	49 34 31	3916	48 21 27	3959
	Fomalhaut	E.	83 17 24	3402	81 55 10	3407	80 33 1	3412	79 10 58	3418
	Jupiter	E.	86 17 19	3069	84 48 32	3072	83 19 48	3073	81 51 6	3076
16	Spica	W.	61 24 37	3088	62 53 1	3088	64 21 25	3088	65 49 49	3089
	Saturn	W.	34 41 14	3066	36 10 17	3056	37 39 20	3058	39 8 21	3058
	a Aquilæ	E.	42 28 5	4237	41 20 14	4310	40 13 31	4393	39 8 3	4480
	Fomalhaut	E.	72 22 27	3461	71 1 8	3466	69 39 57	3466	68 18 55	3475
	Jupiter	E.	74 28 9	3082	72 59 38	3083	71 31 9	3084	70 2 40	3085
	a Pegasi	E.	87 0 34	3330	85 36 57	3331	84 13 21	3333	82 49 48	3337
17	Spica	W.	73 11 46	3088	74 40 10	3087	76 8 36	3087	77 37 2	3086
	Saturn	W.	46 33 26	3057	48 2 28	3056	49 31 31	3056	51 0 34	3055
	Antares	W.	28 33 40	3332	29 57 14	3310	31 21 14	3290	32 45 37	3272
	Fomalhaut	E.	61 36 28	3529	60 16 36	3543	58 56 59	3556	57 37 37	3572
	Jupiter	E.	62 40 21	3085	61 11 53	3084	59 43 25	3084	58 14 55	3083
	a Pegasi	E.	75 52 53	3351	74 29 41	3354	73 6 32	3358	71 43 28	3364
18	Spica	W.	84 59 34	3076	86 28 11	3075	87 56 51	3073	89 25 34	3071
	Saturn	W.	58 26 14	3047	59 55 28	3046	61 24 44	3044	62 54 2	3041
	Antares	W.	39 52 7	3207	41 18 8	3196	42 44 22	3187	44 10 47	3178
	Fomalhaut	E.	51 5 27	3671	49 48 9	3696	48 31 17	3723	47 14 54	3753
	Jupiter	E.	50 52 8	3076	49 23 29	3074	47 54 48	3072	46 26 4	3069
	a Pegasi	E.	64 49 32	3390	63 27 4	3396	62 4 43	3403	60 42 30	3412
19	Spica	W.	96 49 53	3056	98 18 57	3052	99 48 5	3048	101 17 18	3045
	Saturn	W.	70 21 27	3026	71 51 8	3022	73 20 54	3018	74 50 45	3014
	Antares	W.	51 25 28	3137	52 52 53	3129	54 20 27	3122	55 48 10	3114
	Jupiter	E.	39 1 37	3056	37 32 32	3052	36 3 23	3047	34 34 9	3043
	Fomalhaut	E.	41 2 0	3958	39 49 39	4014	38 38 13	4077	37 27 49	4146
	a Pegasi	E.	53 53 58	3463	52 32 53	3476	51 12 2	3491	49 51 28	3506
20	Saturn	W.	82 21 25	2988	83 51 53	2982	85 22 28	2976	86 53 11	2969
	Antares	W.	63 8 59	3077	64 37 37	3069	66 6 24	3061	67 35 21	3054
	Jupiter	E.	27 6 44	3022	25 36 59	3018	24 7 8	3013	22 37 11	3008
	a Pegasi	E.	43 13 55	3623	41 55 45	3653	40 38 8	3689	39 21 9	3729
	a Arietis	E.	84 41 52	3129	83 14 18	3124	81 46 37	3119	80 18 50	3114
	Venus	E.	112 46 19	3471	111 25 23	3464	110 4 19	3457	108 43 7	3450
21	Saturn	W.	94 28 52	2933	96 0 29	2924	97 32 17	2916	99 4 15	2908
	Antares	W.	75 2 36	3011	76 32 35	3001	78 2 46	2993	79 33 8	2982

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
21	a Pegasi	E.	38 4 53	3775	36 49 25	3826	35 34 50	3886	34 21 16	3953
	a Arietis	E.	78 50 57	3108	77 22 57	3103	75 54 51	3097	74 26 38	3091
	Venus	E.	107 21 47	3443	106 0 19	3435	104 38 42	3426	103 16 55	3418
	Sun	E.	132 51 24	3365	131 28 27	3356	130 5 20	3346	128 42 2	3338
22	Antares	W.	81 3 43	2973	82 34 30	2962	84 5 30	2952	85 36 42	2942
	a Aquilæ	W.	39 1 58	4239	40 9 47	4146	41 19 4	4063	42 29 42	3988
	a Arietis	E.	67 3 45	3062	65 34 49	3056	64 5 45	3050	62 36 34	3045
	Venus	E.	96 25 28	3370	95 2 37	3360	93 39 35	3348	92 16 19	3337
	Sun	E.	121 42 44	3286	120 18 16	3275	118 53 35	3263	117 28 40	3252
23	Antares	W.	93 16 10	2885	94 48 48	2874	96 21 40	2862	97 54 48	2849
	a Aquilæ	W.	48 40 39	3672	49 57 56	3622	51 16 7	3575	52 35 9	3529
	a Arietis	E.	55 8 58	3018	53 39 8	3014	52 9 13	3010	50 39 13	3007
	Venus	E.	85 16 36	3276	83 51 56	3262	82 27 0	3248	81 1 48	3234
	Sun	E.	110 20 33	3188	108 54 10	3175	107 27 31	3161	106 0 35	3146
24	Antares	W.	105 44 36	2784	107 19 25	2771	108 54 31	2757	110 29 55	2743
	a Aquilæ	W.	59 22 3	3335	60 45 34	3301	62 9 44	3269	63 34 32	3237
	Fomalhaut	W.	29 33 9	4586	30 35 46	4399	31 41 8	4234	32 49 2	4086
	a Arietis	E.	43 8 34	3005	41 38 28	3010	40 8 28	3016	38 38 35	3024
	Venus	E.	73 51 28	3159	72 24 30	3143	70 57 13	3127	69 29 36	3110
	Sun	E.	98 41 28	3071	97 12 43	3055	95 43 38	3039	94 14 13	3022
25	a Aquilæ	W.	70 47 25	3096	72 15 40	3070	73 44 26	3046	75 13 43	3020
	Fomalhaut	W.	39 0 17	3548	40 19 48	3468	41 40 48	3394	43 3 11	3327
	Jupiter	W.	29 10 22	2605	30 49 10	2588	32 28 22	2569	34 7 59	2552
	a Pegasi	W.	25 45 52	4479	26 50 3	4256	27 57 41	4058	29 8 24	3882
	Venus	E.	62 6 22	3024	60 36 39	3006	59 6 34	2988	57 36 8	2970
	Sun	E.	86 41 53	2936	85 10 19	2918	83 38 23	2900	82 6 4	2881
26	a Aquilæ	W.	82 47 28	2909	84 19 36	2889	85 52 9	2869	87 25 8	2850
	Fomalhaut	W.	50 13 3	3052	51 42 11	3007	53 12 15	2965	54 43 12	2924
	Jupiter	W.	42 32 14	2462	44 14 21	2444	45 56 53	2426	47 39 51	2408
	a Pegasi	W.	35 38 56	3306	37 3 0	3224	38 28 41	3149	39 55 51	3081
	Venus	E.	49 58 9	2879	48 25 23	2861	46 52 14	2843	45 18 42	2826
	Sun	E.	74 18 33	2788	72 43 50	2770	71 8 43	2751	69 33 11	2733
27	Fomalhaut	W.	62 30 1	2750	64 5 35	2719	65 41 49	2691	67 18 41	2663
	Jupiter	W.	56 21 6	2318	58 6 39	2301	59 52 37	2283	61 39 1	2266
	a Pegasi	W.	47 30 39	2811	49 4 52	2769	50 40 1	2728	52 16 4	2689
	Venus	E.	37 25 10	2737	35 49 19	2721	34 13 7	2705	32 36 34	2690
	Sun	E.	61 29 22	2640	59 51 22	2623	58 12 58	2604	56 34 9	2586
28	Fomalhaut	W.	75 31 47	2544	77 11 59	2522	78 52 41	2503	80 33 50	2485
	Jupiter	W.	70 37 16	2184	72 26 8	2169	74 15 23	2153	76 5 1	2139
	a Pegasi	W.	60 28 9	2530	62 8 40	2504	63 49 48	2479	65 31 31	2454
	a Arietis	W.	18 56 8	3698	20 13 5	3439	21 34 37	3233	23 0 7	3066
	Sun	E.	48 14 16	2505	46 33 10	2491	44 51 44	2477	43 9 58	2462
29	Fomalhaut	W.	89 5 27	2410	90 48 47	2400	92 32 22	2390	94 16 12	2380
	Jupiter	W.	85 18 35	2072	87 10 17	2060	89 2 18	2049	90 54 36	2036
	a Pegasi	W.	74 8 0	2355	75 52 40	2339	77 37 43	2324	79 23 8	2310
	a Arietis	W.	30 49 2	2569	32 28 39	2510	34 9 39	2457	35 51 53	2411
	Sun	E.	34 36 38	2407	32 53 13	2400	31 9 38	2393	29 25 53	2386

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	α Pegasi	E.	33° 8′ 50″	4031	31° 57′ 41″	4120	30° 47′ 59″	4222	29° 39′ 54″	4340
	α Arietis	E.	72 58 18	3086	71 29 51	3079	70 1 16	3073	68 32 34	3068
	Venus	E.	101 54 59	3408	100 32 52	3400	99 10 35	3390	97 48 7	3380
	Sun	E.	127 18 34	3327	125 54 54	3318	124 31 3	3307	123 7 0	3296
22	Antares	W.	87 8 8	2931	88 39 47	2920	90 11 40	2909	91 43 48	2898
	α Aquilæ	W.	43 41 38	3912	44 54 46	3846	46 9 1	3784	47 24 20	3727
	α Arietis	E.	61 7 17	3039	59 37 53	3033	58 8 21	3028	56 38 43	3022
	Venus	E.	90 52 50	3326	89 29 8	3313	88 5 12	3301	86 41 2	3288
	Sun	E.	116 3 32	3239	114 38 9	3227	113 12 32	3214	111 46 40	3202
23	Antares	W.	99 28 12	2836	101 1 53	2824	102 35 50	2810	104 10 5	2798
	α Aquilæ	W.	53 55 1	3487	55 15 40	3446	56 37 5	3408	57 59 13	3371
	α Arietis	E.	49 9 9	3005	47 39 2	3003	46 8 53	3002	44 38 43	3003
	Venus	E.	79 36 19	3220	78 10 33	3204	76 44 29	3190	75 18 8	3174
	Sun	E.	104 33 21	3132	103 5 50	3117	101 38 1	3102	100 9 54	3087
24	Antares	W.	112 5 38	2729	113 41 39	2716	115 17 58	2701	116 54 36	2687
	α Aquilæ	W.	64 59 57	3207	66 25 58	3178	67 52 33	3150	69 19 42	3122
	Fomalhaut	W.	33 59 17	3955	35 11 41	3836	36 26 6	3730	37 42 21	3635
	α Arietis	E.	37 8 52	3036	35 39 24	3052	34 10 16	3073	32 41 33	3098
	Venus	E.	68 1 38	3093	66 33 20	3077	65 4 42	3060	63 35 43	3042
	Sun	E.	92 44 27	3005	91 14 21	2988	89 43 53	2971	88 13 4	2954
25	α Aquilæ	W.	76 43 31	2997	78 13 48	2973	79 44 34	2952	81 15 47	2930
	Fomalhaut	W.	44 26 51	3265	45 51 44	3205	47 17 47	3152	48 44 54	3101
	Jupiter	W.	35 48 0	2534	37 28 26	2516	39 9 17	2498	40 50 33	2480
	α Pegasi	W.	30 21 53	3744	31 37 54	3614	32 56 13	3500	34 16 37	3398
	Venus	E.	56 5 18	2952	54 34 5	2935	53 2 30	2916	51 30 31	2898
	Sun	E.	80 33 21	2863	79 0 15	2845	77 26 45	2826	75 52 51	2808
26	α Aquilæ	W.	88 58 31	2831	90 32 18	2815	92 6 27	2798	93 40 58	2782
	Fomalhaut	W.	56 15 0	2886	57 47 37	2850	59 21 0	2815	60 55 8	2781
	Jupiter	W.	49 23 14	2390	51 7 3	2372	52 51 19	2354	54 35 59	2336
	α Pegasi	W.	41 24 24	3018	42 54 14	2961	44 25 16	2907	45 57 26	2858
	Venus	E.	43 44 46	2806	42 10 26	2789	40 35 44	2771	39 0 38	2754
	Sun	E.	67 57 15	2714	66 20 54	2695	64 44 8	2677	63 6 57	2659
27	Fomalhaut	W.	68 56 10	2638	70 34 14	2612	72 12 53	2588	73 52 5	2566
	Jupiter	W.	63 25 50	2249	65 13 5	2233	67 0 44	2216	68 48 48	2200
	α Pegasi	W.	53 52 58	2664	55 30 40	2621	57 9 7	2589	58 48 17	2559
	Venus	E.	30 59 41	2675	29 22 28	2663	27 44 59	2651	26 7 13	2640
	Sun	E.	54 54 57	2570	53 15 21	2553	51 35 22	2537	49 55 0	2521
28	Fomalhaut	W.	82 15 24	2468	83 57 22	2452	85 39 43	2437	87 22 25	2423
	Jupiter	W.	77 55 2	2124	79 45 24	2111	81 36 7	2097	83 27 11	2084
	α Pegasi	W.	67 13 49	2431	68 56 39	2411	70 39 58	2391	72 23 45	2372
	α Arietis	W.	24 28 58	2929	26 0 40	2816	27 34 47	2720	29 11 0	2639
	Sun	E.	41 27 52	2450	39 45 28	2438	38 2 47	2426	36 19 50	2416
29	Fomalhaut	W.	96 0 15	2373	97 44 29	2367	99 28 51	2362	101 13 20	2358
	Jupiter	W.	92 47 10	2028	94 40 0	2019	96 33 4	2010	98 26 22	2003
	α Pegasi	W.	81 8 53	2298	82 54 56	2286	84 41 16	2276	86 27 51	2267
	α Arietis	W.	37 35 12	2371	39 19 28	2335	41 4 36	2304	42 50 29	2277
	Sun	E.	27 42 2	2386	25 58 7	2386	24 14 12	2388	22 30 20	2394

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	6 39 44.23	10.346	N.23 8 21.5	9.82	15 46.11	68.79	3 26.74	0.489
Tues.	2	6 43 52.44	10.335	23 4 13.6	10.83	15 46.10	68.76	3 38.36	0.479
Wed.	3	6 48 0.38	10.323	22 59 41.6	11.83	15 46.10	68.72	3 49.71	0.467
Thur.	4	6 52 8.03	10.310	22 54 45.5	12.83	15 46.11	68.68	4 0.77	0.454
Fri.	5	6 56 15.36	10.296	22 49 25.5	13.83	15 46.12	68.63	4 11.51	0.440
Sat.	6	7 0 22.35	10.282	22 43 41.7	14.81	15 46.14	68.58	4 21.92	0.425
Sun.	7	7 4 28.97	10.266	22 37 34.2	15.80	15 46.16	68.53	4 31.95	0.409
Mon.	8	7 8 35.20	10.249	22 31 3.3	16.77	15 46.19	68.48	4 41.60	0.393
Tues.	9	7 12 41.02	10.232	22 24 9.0	17.74	15 46.22	68.43	4 50.84	0.376
Wed.	10	7 16 46.41	10.214	22 16 51.4	18.70	15 46.26	68.37	4 59.65	0.358
Thur.	11	7 20 51.37	10.196	22 9 10.7	19.66	15 46.30	68.31	5 8.03	0.340
Fri.	12	7 24 55.88	10.177	22 1 7.3	20.61	15 46.34	68.25	5 15.97	0.321
Sat.	13	7 28 59.92	10.157	21 52 41.3	21.55	15 46.39	68.19	5 23.43	0.301
Sun.	14	7 33 3.47	10.137	21 43 52.9	22.48	15 46.44	68.12	5 30.40	0.281
Mon.	15	7 37 6.53	10.116	21 34 42.2	23.40	15 46.50	68.05	5 36.89	0.260
Tues.	16	7 41 9.08	10.095	21 25 9.4	24.31	15 46.56	67.98	5 42.87	0.239
Wed.	17	7 45 11.13	10.074	21 15 14.7	25.22	15 46.62	67.90	5 48.35	0.217
Thur.	18	7 49 12.66	10.053	21 4 58.2	26.12	15 46.68	67.83	5 53.31	0.196
Fri.	19	7 53 13.67	10.031	20 54 20.3	27.01	15 46.75	67.75	5 57.75	0.174
Sat.	20	7 57 14.14	10.009	20 43 21.3	27.89	15 46.82	67.67	6 1.65	0.152
Sun.	21	8 1 14.08	9.986	20 32 1.4	28.76	15 46.89	67.59	6 5.01	0.129
Mon.	22	8 5 13.47	9.963	20 20 20.6	29.62	15 46.97	67.51	6 7.84	0.106
Tues.	23	8 9 12.31	9.940	20 8 19.3	30.47	15 47.05	67.43	6 10.13	0.083
Wed.	24	8 13 10.59	9.917	19 55 57.9	31.30	15 47.14	67.35	6 11.85	0.060
Thur.	25	8 17 8.30	9.893	19 43 16.6	32.13	15 47.23	67.26	6 13.00	0.036
Fri.	26	8 21 5.44	9.869	19 30 15.4	32.94	15 47.32	67.18	6 13.58	0.012
Sat.	27	8 25 2.00	9.845	19 16 54.8	33.75	15 47.42	67.09	6 13.59	0.012
Sun.	28	8 28 57.97	9.821	19 3 15.0	34.55	15 47.53	67.01	6 13.01	0.036
Mon.	29	8 32 53.37	9.796	18 49 16.3	35.33	15 47.64	66.92	6 11.85	0.060
Tues.	30	8 36 48.18	9.771	18 34 59.1	36.10	15 47.75	66.84	6 10.11	0.085
Wed.	31	8 40 42.39	9.746	18 20 23.6	36.86	15 47.87	66.75	6 7.78	0.110
Thur.	32	8 44 36.00	9.721	N.18 5 30.1	37.61	15 48.00	66.67	6 4.84	0.135

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	6 39 43.63	10.346	N.23 8 22.0	9.82	3 26.70	0.489	6 36 16.93
Tues.	2	6 43 51.81	10.335	23 4 14.3	10.83	3 38.32	0.479	6 40 13.49
Wed.	3	6 47 59.72	10.323	22 59 42.4	11.83	3 49.68	0.467	6 44 10.04
Thur.	4	6 52 7.34	10.310	22 54 46.4	12.83	4 0.74	0.454	6 48 6.60
Fri.	5	6 56 14.64	10.296	22 49 26.5	13.83	4 11.48	0.440	6 52 3.16
Sat.	6	7 0 21.60	10.282	22 43 42.8	14.81	4 21.89	0.425	6 55 59.71
Sun.	7	7 4 28.19	10.266	22 37 35.4	15.80	4 31.92	0.409	6 59 56.27
Mon.	8	7 8 34.40	10.249	22 31 4.6	16.77	4 41.57	0.393	7 3 52.83
Tues.	9	7 12 40.19	10.232	22 24 10.4	17.74	4 50.81	0.376	7 7 49.38
Wed.	10	7 16 45.56	10.214	22 16 52.9	18.70	4 59.62	0.358	7 11 45.94
Thur.	11	7 20 50.50	10.196	22 9 12.4	19.66	5 8.00	0.340	7 15 42.50
Fri.	12	7 24 54.99	10.177	22 1 9.2	20.61	5 15.94	0.321	7 19 39.05
Sat.	13	7 28 59.01	10.157	21 52 43.4	21.55	5 23.40	0.301	7 23 35.61
Sun.	14	7 33 2.54	10.137	21 43 55.0	22.48	5 30.37	0.281	7 27 32.17
Mon.	15	7 37 5.58	10.116	21 34 44.4	23.40	5 36.86	0.260	7 31 28.72
Tues.	16	7 41 8.12	10.095	21 25 11.7	24.31	5 42.84	0.239	7 35 25.28
Wed.	17	7 45 10.15	10.074	21 15 17.1	25.22	5 48.32	0.217	7 39 21.83
Thur.	18	7 49 11.67	10.053	21 5 0.8	26.12	5 53.28	0.196	7 43 18.39
Fri.	19	7 53 12.67	10.031	20 54 23.0	27.01	5 57.72	0.174	7 47 14.95
Sat.	20	7 57 13.13	10.009	20 43 24.1	27.89	6 1.63	0.152	7 51 11.50
Sun.	21	8 1 13.06	9.986	20 32 4.4	28.76	6 5.00	0.129	7 55 8.06
Mon.	22	8 5 12.45	9.963	20 20 23.7	29.62	6 7.84	0.106	7 59 4.61
Tues.	23	8 9 11.29	9.940	20 8 22.5	30.47	6 10.12	0.083	8 3 1.17
Wed.	24	8 13 9.57	9.917	19 56 1.2	31.30	6 11.84	0.060	8 6 57.73
Thur.	25	8 17 7.28	9.893	19 43 19.9	32.13	6 13.00	0.036	8 10 54.28
Fri.	26	8 21 4.42	9.869	19 30 18.8	32.94	6 13.58	0.012	8 14 50.84
Sat.	27	8 25 0.98	9.845	19 16 58.3	33.75	6 13.59	0.012	8 18 47.39
Sun.	28	8 28 56.96	9.821	19 3 18.6	34.55	6 13.01	0.036	8 22 43.95
Mon.	29	8 32 52.36	9.796	18 49 20.0	35.33	6 11.86	0.060	8 26 40.50
Tues.	30	8 36 47.18	9.771	18 35 2.8	36.10	6 10.12	0.085	8 30 37.06
Wed.	31	8 40 41.40	9.746	18 20 27.3	36.86	6 7.79	0.110	8 34
Thur.	32	8 44 35.01	9.721	N.18 5 33.8	37.61	6 4.85	0.135	8

Note. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	182	99 7 52.3	7 30.7	143.04	—0.33	0.0072352	1.5	17 20 52.07
2	183	100 5 5.4	4 43.6	143.04	0.28	.0072376	0.4	17 16 56.17
3	184	101 2 18.4	1 56.4	143.04	0.21	.0072373	0.7	17 13 0.26
4	185	101 59 31.4	59 9.2	143.04	—0.12	.0072343	1.8	17 9 4.35
5	186	102 56 44.2	56 21.9	143.03	0.00	.0072288	2.8	17 5 8.44
6	187	103 53 56.8	53 34.4	143.03	+0.13	.0072208	3.8	17 1 12.53
7	188	104 51 9.4	50 46.8	143.02	0.26	.0072104	4.7	16 57 16.62
8	189	105 48 21.8	47 59.0	143.02	0.39	.0071977	5.7	16 53 20.71
9	190	106 45 34.2	45 11.2	143.02	0.51	.0071829	6.6	16 49 24.80
10	191	107 42 46.5	42 23.4	143.02	0.62	.0071661	7.4	16 45 28.88
11	192	108 39 58.8	39 35.6	143.01	0.71	.0071473	8.2	16 41 32.97
12	193	109 37 11.1	36 47.7	143.01	0.76	.0071268	8.9	16 37 37.06
13	194	110 34 23.5	33 59.9	143.02	0.77	.0071046	9.6	16 33 41.15
14	195	111 31 36.0	31 12.2	143.03	0.75	.0070808	10.2	16 29 45.25
15	196	112 28 48.8	28 24.9	143.04	0.71	.0070555	10.8	16 25 49.34
16	197	113 26 2.0	25 38.0	143.05	0.65	.0070288	11.4	16 21 53.43
17	198	114 23 15.6	22 51.5	143.07	0.56	.0070008	11.9	16 17 57.51
18	199	115 20 29.6	20 5.3	143.09	0.45	.0069714	12.5	16 14 1.60
19	200	116 17 44.2	17 19.7	143.12	0.33	.0069407	13.1	16 10 5.69
20	201	117 14 59.6	14 35.0	143.15	0.20	.0069086	13.7	16 6 9.78
21	202	118 12 15.6	11 50.9	143.18	+0.06	.0068749	14.4	16 2 13.88
22	203	119 9 32.4	9 7.6	143.22	—0.07	.0068395	15.1	15 58 17.96
23	204	120 6 50.1	6 25.1	143.26	0.19	.0068023	15.9	15 54 22.05
24	205	121 4 8.8	3 43.6	143.30	0.29	.0067631	16.7	15 50 26.14
25	206	122 1 28.4	1 3.1	143.34	0.37	.0067220	17.6	15 46 30.23
26	207	122 58 49.1	58 23.7	143.38	0.42	.0066788	18.5	15 42 34.32
27	208	123 56 10.8	55 45.3	143.42	0.44	.0066334	19.4	15 38 38.41
28	209	124 53 33.4	53 7.7	143.46	0.42	.0065857	20.3	15 34 42.50
29	210	125 50 57.0	50 31.1	143.50	0.37	.0065357	21.3	15 30 46.59
30	211	126 48 21.5	47 55.5	143.54	0.30	.0064833	22.4	15 26 50.69
31	212	127 45 46.9	45 20.8	143.58	0.21	.0064283	23.4	15 22 54.78
32	213	128 43 13.2	42 47.0	143.62	—0.11	0.0063709	24.4	15 18 58.87

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 44.9	16 44.6	61 21.7	+0.12	61 20.6	−0.30	δ		28.9
2	16 43.0	16 40.0	61 14.6	−0.70	61 3.7	1.09	0 39.3	2.59	0.6
3	16 35.9	16 30.6	60 48.4	1.43	60 29.3	1.73	1 40.4	2.48	1.6
4	16 24.5	16 17.7	60 6.9	1.98	59 41.8	2.17	2 38.3	2.34	2.6
5	16 10.4	16 2.7	59 14.8	2.20	58 46.7	2.36	3 32.7	2.20	3.6
6	15 54.9	15 47.2	58 18.1	2.38	57 49.5	2.36	4 23.8	2.07	4.6
7	15 39.6	15 32.2	57 21.6	2.29	56 54.7	2.18	5 12.3	1.98	5.6
8	15 25.3	15 18.8	56 29.2	2.05	56 5.5	1.90	5 59.0	1.92	6.6
9	15 12.9	15 7.5	55 43.7	1.73	55 23.9	1.56	6 44.7	1.90	7.6
10	15 2.7	14 58.4	55 6.2	1.39	54 50.6	1.21	7 30.1	1.90	8.6
11	14 54.8	14 51.7	54 37.2	1.03	54 25.9	0.85	8 15.7	1.91	9.6
12	14 49.2	14 47.3	54 16.7	0.68	54 9.6	0.52	9 1.9	1.94	10.6
13	14 45.8	14 44.9	54 4.3	0.36	54 0.9	−0.21	9 48.7	1.96	11.6
14	14 44.4	14 44.4	53 59.2	−0.08	53 59.0	+0.06	10 36.1	1.98	12.6
15	14 44.8	14 45.5	54 0.4	+0.17	54 3.1	0.28	11 23.6	1.98	13.6
16	14 46.6	14 48.1	54 7.2	0.39	54 12.5	0.49	12 10.9	1.96	14.6
17	14 49.8	14 51.9	54 19.0	0.59	54 26.8	0.69	12 57.8	1.94	15.6
18	14 54.4	14 57.1	54 35.6	0.79	54 45.7	0.89	13 44.1	1.92	16.6
19	15 0.2	15 3.6	54 57.0	0.99	55 9.6	1.10	14 29.8	1.90	17.6
20	15 7.4	15 11.5	55 23.4	1.21	55 38.5	1.31	15 15.3	1.90	18.6
21	15 16.0	15 20.8	55 55.0	1.42	56 12.6	1.52	16 1.1	1.92	19.6
22	15 25.9	15 31.3	56 31.4	1.62	56 51.5	1.72	16 47.7	1.97	20.6
23	15 37.1	15 43.1	57 12.6	1.80	57 34.7	1.87	17 36.0	2.06	21.6
24	15 49.3	15 55.6	57 57.4	1.92	58 20.7	1.94	18 26.7	2.18	22.6
25	16 2.0	16 8.3	58 44.1	1.94	59 7.2	1.90	19 20.5	2.31	23.6
26	16 14.4	16 20.1	59 29.6	1.81	59 50.7	1.68	20 17.6	2.44	24.6
27	16 25.4	16 29.9	60 9.9	1.50	60 26.6	1.27	21 17.6	2.54	25.6
28	16 33.7	16 36.4	60 40.3	1.00	60 50.6	+0.69	22 19.3	2.58	26.6
29	16 38.2	16 38.7	60 56.9	+0.35	60 58.9	−0.01	23 20.9	2.54	27.6
30	16 38.1	16 36.2	60 56.5	−0.38	60 49.7	0.75	δ		28.6
31	16 33.2	16 29.0	60 38.6	1.10	60 23.4	1.42	0 20.8	2.44	0.3
32	16 23.9	16 17.9	60 4.6	−1.70	59 42.6	−1.93	1 18.0	2.32	1.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 13 42.78	2.6830	N.18 34 44.8	0.043	0	8 20 31.38	2.5596	N.15 59 59.8	6.214
1	6 16 23.77	2.6332	18 34 43.1	0.099	1	8 23 4.82	2.5548	15 53 43.8	6.321
2	6 19 4.76	2.6833	18 34 32.9	0.241	2	8 25 37.96	2.5499	15 47 21.3	6.427
3	6 21 45.75	2.6832	18 34 14.2	0.383	3	8 28 10.81	2.5450	15 40 52.5	6.532
4	6 24 26.74	2.6830	18 33 47.0	0.525	4	8 30 43.36	2.5400	15 34 17.5	6.636
5	6 27 7.71	2.6826	18 33 11.3	0.666	5	8 33 15.61	2.5350	15 27 36.3	6.737
6	6 29 48.65	2.6821	18 32 27.1	0.808	6	8 35 47.56	2.5299	15 20 49.1	6.838
7	6 32 29.56	2.6814	18 31 34.4	0.949	7	8 38 19.20	2.5248	15 13 55.8	6.937
8	6 35 10.42	2.6807	18 30 33.2	1.090	8	8 40 50.53	2.5196	15 6 56.6	7.035
9	6 37 51.24	2.6799	18 29 23.6	1.231	9	8 43 21.55	2.5143	14 59 51.6	7.132
10	6 40 32.01	2.6789	18 28 5.5	1.371	10	8 45 52.25	2.5091	14 52 40.8	7.228
11	6 43 12.71	2.6778	18 26 39.0	1.511	11	8 48 22.64	2.5038	14 45 24.3	7.322
12	6 45 53.34	2.6765	18 25 4.1	1.652	12	8 50 52.70	2.4984	14 38 2.2	7.414
13	6 48 33.89	2.6752	18 23 20.7	1.792	13	8 53 22.44	2.4930	14 30 34.6	7.505
14	6 51 14.36	2.6737	18 21 29.0	1.931	14	8 55 51.86	2.4877	14 23 1.6	7.595
15	6 53 54.74	2.6721	18 19 29.0	2.070	15	8 58 20.96	2.4823	14 15 23.2	7.684
16	6 56 35.01	2.6703	18 17 20.6	2.208	16	9 0 49.73	2.4768	14 7 39.5	7.771
17	6 59 15.18	2.6685	18 15 3.9	2.346	17	9 3 18.18	2.4713	13 59 50.6	7.857
18	7 1 55.23	2.6665	18 12 39.0	2.483	18	9 5 46.29	2.4658	13 51 56.7	7.941
19	7 4 35.16	2.6644	18 10 5.9	2.620	19	9 8 14.07	2.4603	13 43 57.7	8.024
20	7 7 14.96	2.6622	18 7 24.6	2.756	20	9 10 41.52	2.4548	13 35 53.8	8.106
21	7 9 54.63	2.6599	18 4 35.1	2.892	21	9 13 8.64	2.4492	13 27 45.0	8.186
22	7 12 34.15	2.6575	18 1 37.5	3.027	22	9 15 35.42	2.4436	13 19 31.5	8.264
23	7 15 13.53	2.6550	N.17 58 31.9	3.161	23	9 18 1.87	2.4380	N.13 11 13.3	8.341
	TUESDAY 2.					THURSDAY 4.			
0	7 17 52.75	2.6523	N.17 55 18.2	3.296	0	9 20 27.98	2.4324	N.13 2 50.6	8.417
1	7 20 31.81	2.6495	17 51 56.5	3.428	1	9 22 53.75	2.4268	12 54 23.4	8.491
2	7 23 10.69	2.6466	17 48 26.9	3.560	2	9 25 19.19	2.4212	12 45 51.7	8.564
3	7 25 49.40	2.6436	17 44 49.4	3.690	3	9 27 44.29	2.4156	12 37 15.7	8.635
4	7 28 27.92	2.6405	17 41 4.1	3.820	4	9 30 9.06	2.4100	12 28 35.5	8.706
5	7 31 6.26	2.6373	17 37 11.0	3.950	5	9 32 33.49	2.4043	12 19 51.1	8.774
6	7 33 44.40	2.6340	17 33 10.1	4.079	6	9 34 57.58	2.3987	12 11 2.6	8.841
7	7 36 22.34	2.6307	17 29 1.6	4.206	7	9 37 21.33	2.3931	12 2 10.2	8.907
8	7 39 0.08	2.6272	17 24 45.4	4.332	8	9 39 44.75	2.3875	11 53 13.8	8.971
9	7 41 37.60	2.6236	17 20 21.7	4.458	9	9 42 7.83	2.3819	11 44 13.6	9.034
10	7 44 14.91	2.6199	17 15 50.4	4.583	10	9 44 30.58	2.3763	11 35 9.7	9.096
11	7 46 51.99	2.6161	17 11 11.7	4.707	11	9 46 52.99	2.3708	11 26 2.1	9.156
12	7 49 28.84	2.6122	17 6 25.6	4.830	12	9 49 15.07	2.3652	11 16 51.0	9.215
13	7 52 5.45	2.6083	17 1 32.2	4.951	13	9 51 36.81	2.3596	11 7 36.3	9.273
14	7 54 41.83	2.6043	16 56 31.5	5.071	14	9 53 58.22	2.3541	10 58 18.3	9.329
15	7 57 17.96	2.6002	16 51 23.6	5.191	15	9 56 19.30	2.3486	10 48 57.0	9.384
16	7 59 53.85	2.5960	16 46 8.6	5.310	16	9 58 41.05	2.3431	10 39 32.4	9.437
17	8 2 29.48	2.5917	16 40 46.5	5.427	17	10 1 1.47	2.3376	10 30 4.6	9.488
18	8 5 4.85	2.5873	16 35 17.4	5.543	18	10 3 21.56	2.3321	10 20 33.8	9.539
19	8 7 39.95	2.5828	16 29 41.4	5.658	19	10 5 41.32	2.3266	10 11 0.0	9.588
20	8 10 14.79	2.5783	16 23 58.5	5.772	20	10 8 0.75	2.3212	10 1 23.1	9.636
21	8 12 49.36	2.5738	16 18 8.8	5.884	21	10 10 19.86	2.3158	9 51 43.6	9.682
22	8 15 23.65	2.5691	16 12 12.4	5.995	22	10 12 38.64	2.3104	9 42 1.3	9.727
23	8 17 57.66	2.5644	16 6 9.4	6.105	23	10 14 57.10	2.3051	9 32 16.4	9.771
24	8 20 31.38	2.5596	N.15 59 59.8	6.214	24	10 17 14.25	2.2998	N. 9 22 28.9	9.814

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 5.					SUNDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 17 14.25	2.2998	N. 9 22 28.9	9.814	0	12 2 14.82	2.0937	N. 1 4 51.2	10.512
1	10 19 32.08	2.2945	9 12 38.8	9.855	1	12 4 20.35	2.0906	0 54 20.8	10.503
2	10 21 49.59	2.2892	9 2 46.3	9.895	2	12 6 25.69	2.0876	0 43 50.9	10.493
3	10 24 6.79	2.2840	8 52 51.4	9.934	3	12 8 30.85	2.0846	0 33 21.7	10.482
4	10 26 23.67	2.2788	8 42 54.2	9.972	4	12 10 35.84	2.0817	0 22 53.1	10.470
5	10 28 40.24	2.2736	8 32 54.8	10.008	5	12 12 40.66	2.0788	0 12 25.3	10.457
6	10 30 56.50	2.2685	8 22 53.3	10.043	6	12 14 45.30	2.0760	N. 0 1 58.3	10.443
7	10 33 12.46	2.2634	8 12 49.7	10.077	7	12 16 49.78	2.0733	S. 0 8 27.9	10.429
8	10 35 28.11	2.2583	8 2 44.1	10.110	8	12 18 54.09	2.0706	0 18 53.2	10.414
9	10 37 43.46	2.2533	7 52 36.6	10.141	9	12 20 58.24	2.0679	0 29 17.6	10.398
10	10 39 58.51	2.2483	7 42 27.2	10.171	10	12 23 2.24	2.0653	0 39 41.0	10.382
11	10 42 13.26	2.2434	7 32 16.1	10.199	11	12 25 6.09	2.0628	0 50 3.4	10.365
12	10 44 27.72	2.2375	7 22 3.3	10.226	12	12 27 9.78	2.0603	1 0 24.8	10.347
13	10 46 41.89	2.2337	7 11 48.9	10.253	13	12 29 13.32	2.0578	1 10 45.1	10.328
14	10 48 55.76	2.2289	7 1 32.9	10.279	14	12 31 16.72	2.0555	1 21 4.2	10.308
15	10 51 9.35	2.2241	6 51 15.5	10.303	15	12 33 19.98	2.0532	1 31 22.1	10.288
16	10 53 22.65	2.2194	6 40 56.6	10.326	16	12 35 23.10	2.0509	1 41 38.8	10.267
17	10 55 35.67	2.2147	6 30 36.4	10.347	17	12 37 26.08	2.0486	1 51 54.2	10.245
18	10 57 48.41	2.2101	6 20 14.9	10.368	18	12 39 28.93	2.0464	2 2 8.2	10.223
19	11 0 0.88	2.2055	6 9 52.2	10.388	19	12 41 31.65	2.0443	2 12 20.9	10.200
20	11 2 13.07	2.2009	5 59 28.3	10.406	20	12 43 34.25	2.0420	2 22 32.2	10.176
21	11 4 24.99	2.1963	5 49 3.4	10.423	21	12 45 36.73	2.0403	2 32 42.0	10.151
22	11 6 36.63	2.1919	5 38 37.5	10.439	22	12 47 39.08	2.0383	2 42 50.3	10.126
23	11 8 48.01	2.1875	N. 5 28 10.6	10.455	23	12 49 41.32	2.0363	S. 2 52 57.1	10.101
	SATURDAY 6.					MONDAY 8.			
0	11 10 59.13	2.1831	N. 5 17 42.9	10.469	0	12 51 43.44	2.0345	S. 3 3 2.4	10.076
1	11 13 9.99	2.1788	5 7 14.4	10.482	1	12 53 45.45	2.0327	3 13 6.1	10.048
2	11 15 20.59	2.1745	4 56 45.1	10.494	2	12 55 47.36	2.0309	3 23 8.2	10.020
3	11 17 30.94	2.1703	4 46 15.1	10.505	3	12 57 49.16	2.0292	3 33 8.6	9.992
4	11 19 41.03	2.1662	4 35 44.5	10.515	4	12 59 50.86	2.0275	3 43 7.2	9.963
5	11 21 50.88	2.1621	4 25 13.4	10.523	5	13 1 52.46	2.0259	3 53 4.1	9.933
6	11 24 0.48	2.1580	4 14 41.7	10.531	6	13 3 53.97	2.0243	4 2 59.2	9.903
7	11 26 9.84	2.1540	4 4 9.6	10.538	7	13 5 55.38	2.0228	4 12 52.5	9.873
8	11 28 18.96	2.1540	3 53 37.1	10.544	8	13 7 56.70	2.0213	4 22 43.9	9.842
9	11 30 27.84	2.1461	3 43 4.3	10.549	9	13 9 57.94	2.0199	4 32 33.4	9.809
10	11 32 36.49	2.1422	3 32 31.2	10.553	10	13 11 59.09	2.0185	4 42 21.0	9.776
11	11 34 44.91	2.1384	3 21 57.9	10.557	11	13 14 0.16	2.0172	4 52 6.6	9.743
12	11 36 53.10	2.1347	3 11 24.4	10.559	12	13 16 1.15	2.0159	5 1 50.2	9.709
13	11 39 1.07	2.1310	3 0 50.9	10.559	13	13 18 2.07	2.0147	5 11 31.7	9.675
14	11 41 8.82	2.1273	2 50 17.3	10.559	14	13 20 2.91	2.0135	5 21 11.2	9.640
15	11 43 16.35	2.1237	2 39 43.7	10.559	15	13 22 3.68	2.0123	5 30 48.5	9.604
16	11 45 23.66	2.1201	2 29 10.2	10.558	16	13 24 4.39	2.0112	5 40 23.7	9.568
17	11 47 30.76	2.1166	2 18 36.8	10.555	17	13 26 5.03	2.0102	5 49 56.7	9.532
18	11 49 37.65	2.1132	2 8 3.6	10.551	18	13 28 5.61	2.0092	5 59 27.5	9.495
19	11 51 44.34	2.1098	1 57 30.7	10.547	19	13 30 6.13	2.0083	6 8 56.0	9.457
20	11 53 50.83	2.1065	1 46 58.0	10.542	20	13 32 6.60	2.0073	6 18 22.3	9.418
21	11 55 57.12	2.1032	1 36 25.7	10.536	21	13 34 7.01	2.0064	6 27 46.2	9.379
22	11 58 3.21	2.1000	1 25 53.7	10.529	22	13 36 7.37	2.0056	6 37 7.8	9.340
23	12 0 9.11	2.0968	1 15 22.2	10.521	23	13 38 7.68	2.0048	6 46 27.0	9.300
24	12 2 14.82	2.0937	N. 1 4 51.2	10.512	24	13 40 7.94	2.0040	S. 6 55 43.8	9.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 9.					THURSDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 40 7.94	2.0040	S. 6 55 43.8	9.259	0	15 16 10.53	2.0097	S. 13 24 1.6	6.741
1	13 42 8.16	2.0033	7 4 58.1	9.218	1	15 18 11.14	2.0105	13 30 44.2	6.677
2	13 44 8.34	2.0027	7 14 10.0	9.177	2	15 20 11.79	2.0113	13 37 22.9	6.614
3	13 46 8.48	2.0021	7 23 19.4	9.135	3	15 22 12.49	2.0122	13 43 57.8	6.550
4	13 48 8.59	2.0015	7 32 26.2	9.092	4	15 24 13.25	2.0130	13 50 28.9	6.486
5	13 50 8.66	2.0009	7 41 30.5	9.049	5	15 26 14.05	2.0138	13 56 56.1	6.421
6	13 52 8.70	2.0004	7 50 32.1	9.005	6	15 28 14.91	2.0146	14 3 19.4	6.355
7	13 54 8.71	2.0000	7 59 31.1	8.961	7	15 30 15.81	2.0155	14 9 38.7	6.289
8	13 56 8.70	1.9996	8 8 27.4	8.916	8	15 32 16.77	2.0164	14 15 54.1	6.223
9	13 58 8.66	1.9992	8 17 21.0	8.871	9	15 34 17.78	2.0173	14 22 5.5	6.157
10	14 0 8.60	1.9989	8 26 11.9	8.825	10	15 36 18.84	2.0182	14 28 12.9	6.090
11	14 2 8.52	1.9986	8 35 0.0	8.779	11	15 38 19.96	2.0192	14 34 16.3	6.023
12	14 4 8.43	1.9983	8 43 45.4	8.732	12	15 40 21.14	2.0201	14 40 15.8	5.956
13	14 6 8.32	1.9981	8 52 27.9	8.685	13	15 42 22.37	2.0210	14 46 11.1	5.887
14	14 8 8.20	1.9979	9 1 7.6	8.637	14	15 44 23.66	2.0220	14 52 2.3	5.819
15	14 10 8.07	1.9978	9 9 44.4	8.589	15	15 46 25.01	2.0230	14 57 49.4	5.750
16	14 12 7.93	1.9976	9 18 18.3	8.540	16	15 48 26.42	2.0239	15 3 32.3	5.681
17	14 14 7.78	1.9975	9 26 49.2	8.491	17	15 50 27.89	2.0249	15 9 11.1	5.612
18	14 16 7.63	1.9975	9 35 17.2	8.441	18	15 52 29.41	2.0258	15 14 45.7	5.542
19	14 18 7.48	1.9975	9 43 42.2	8.391	19	15 54 30.99	2.0268	15 20 16.1	5.472
20	14 20 7.33	1.9975	9 52 4.1	8.340	20	15 56 32.63	2.0278	15 25 42.3	5.401
21	14 22 7.18	1.9975	10 0 23.0	8.289	21	15 58 34.33	2.0289	15 31 4.2	5.330
22	14 24 7.03	1.9976	10 8 38.8	8.238	22	16 0 36.10	2.0299	15 36 21.9	5.259
23	14 26 6.89	1.9978	S. 10 16 51.5	8.186	23	16 2 37.92	2.0309	S. 15 41 35.3	5.187
	WEDNESDAY 10.					FRIDAY 12.			
0	14 28 6.76	1.9979	S. 10 25 1.1	8.134	0	16 4 39.81	2.0319	S. 15 46 44.3	5.115
1	14 30 6.64	1.9981	10 33 7.5	8.081	1	16 6 41.76	2.0330	15 51 49.0	5.043
2	14 32 6.53	1.9983	10 41 10.8	8.027	2	16 8 43.77	2.0340	15 56 49.4	4.970
3	14 34 6.44	1.9986	10 49 10.8	7.973	3	16 10 45.84	2.0350	16 1 45.4	4.897
4	14 36 6.36	1.9988	10 57 7.6	7.919	4	16 12 47.97	2.0361	16 6 37.0	4.824
5	14 38 6.30	1.9991	11 5 1.1	7.865	5	16 14 50.17	2.0372	16 11 24.2	4.750
6	14 40 6.25	1.9994	11 12 51.4	7.810	6	16 16 52.43	2.0382	16 16 7.0	4.676
7	14 42 6.23	1.9998	11 20 38.3	7.754	7	16 18 54.75	2.0392	16 20 45.3	4.601
8	14 44 6.23	2.0002	11 28 21.9	7.698	8	16 20 57.13	2.0402	16 25 19.1	4.527
9	14 46 6.26	2.0007	11 36 2.1	7.642	9	16 22 59.57	2.0413	16 29 48.5	4.452
10	14 48 6.31	2.0011	11 43 38.9	7.585	10	16 25 2.08	2.0423	16 34 13.4	4.377
11	14 50 6.39	2.0016	11 51 12.3	7.527	11	16 27 4.65	2.0433	16 38 33.7	4.301
12	14 52 6.49	2.0020	11 58 42.2	7.469	12	16 29 7.28	2.0443	16 42 49.5	4.225
13	14 54 6.62	2.0025	12 6 8.6	7.411	13	16 31 9.97	2.0454	16 47 0.7	4.149
14	14 56 6.79	2.0031	12 13 31.5	7.352	14	16 33 12.73	2.0464	16 51 7.4	4.073
15	14 58 6.99	2.0037	12 20 50.9	7.293	15	16 35 15.54	2.0474	16 55 9.5	3.996
16	15 0 7.23	2.0042	12 28 6.7	7.233	16	16 37 18.42	2.0484	16 59 6.9	3.919
17	15 2 7.50	2.0048	12 35 18.9	7.173	17	16 39 21.35	2.0494	17 2 59.7	3.841
18	15 4 7.81	2.0055	12 42 27.5	7.113	18	16 41 24.35	2.0504	17 6 47.8	3.764
19	15 6 8.16	2.0062	12 49 32.4	7.052	19	16 43 27.41	2.0514	17 10 31.3	3.686
20	15 8 8.55	2.0068	12 56 33.7	6.990	20	16 45 30.52	2.0524	17 14 10.1	3.608
21	15 10 8.98	2.0075	13 3 31.3	6.928	21	16 47 33.69	2.0533	17 17 44.1	3.529
22	15 12 9.45	2.0082	13 10 25.1	6.866	22	16 49 36.92	2.0543	17 21 13.4	3.450
23	15 14 9.97	2.0090	13 17 15.2	6.804	23	16 51 40.21	2.0553	17 24 38.0	3.371
24	15 16 10.53	2.0097	S. 13 24 1.6	6.741	24	16 53 43.56	2.0563	S. 17 27 58.0	3.292

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 53 43.56	2.0563	S. 17 27 58.0	3.292
1	16 55 46.96	2.0572	17 31 13.1	3.213
2	16 57 50.42	2.0581	17 34 23.5	3.133
3	16 59 53.93	2.0590	17 37 29.1	3.053
4	17 1 57.50	2.0599	17 40 29.8	2.973
5	17 4 1.12	2.0608	17 43 25.7	2.892
6	17 6 4.80	2.0617	17 46 16.8	2.811
7	17 8 8.52	2.0625	17 49 3.0	2.730
8	17 10 12.30	2.0634	17 51 44.3	2.649
9	17 12 16.13	2.0642	17 54 20.8	2.568
10	17 14 20.01	2.0650	17 56 52.4	2.486
11	17 16 23.94	2.0658	17 59 19.1	2.404
12	17 18 27.91	2.0666	18 1 40.8	2.322
13	17 20 31.93	2.0674	18 3 57.6	2.239
14	17 22 36.00	2.0681	18 6 9.5	2.157
15	17 24 40.11	2.0688	18 8 16.5	2.074
16	17 26 44.26	2.0696	18 10 18.5	1.991
17	17 28 48.46	2.0703	18 12 15.5	1.908
18	17 30 52.70	2.0710	18 14 7.5	1.825
19	17 32 56.98	2.0717	18 15 54.5	1.742
20	17 35 1.30	2.0724	18 17 36.6	1.659
21	17 37 5.66	2.0730	18 19 13.6	1.576
22	17 39 10.06	2.0736	18 20 45.6	1.492
23	17 41 14.49	2.0742	S. 18 22 12.6	1.408

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 43 18.96	2.0748	S. 18 23 34.5	1.324
1	17 45 23.46	2.0753	18 24 51.4	1.240
2	17 47 28.00	2.0758	18 26 3.3	1.156
3	17 49 32.56	2.0763	18 27 10.1	1.071
4	17 51 37.16	2.0768	18 28 11.8	0.987
5	17 53 41.79	2.0773	18 29 8.5	0.903
6	17 55 46.44	2.0778	18 30 0.1	0.818
7	17 57 51.12	2.0782	18 30 46.6	0.733
8	17 59 55.82	2.0786	18 31 28.1	0.648
9	18 2 0.54	2.0789	18 32 4.4	0.563
10	18 4 5.29	2.0793	18 32 35.7	0.479
11	18 6 10.06	2.0797	18 33 1.9	0.394
12	18 8 14.85	2.0800	18 33 23.0	0.309
13	18 10 19.66	2.0803	18 33 39.0	0.224
14	18 12 24.48	2.0806	18 33 49.9	0.139
15	18 14 29.32	2.0808	18 33 55.7	0.053
16	18 16 34.17	2.0810	18 33 56.3	0.032
17	18 18 39.03	2.0812	18 33 51.9	0.117
18	18 20 43.91	2.0814	18 33 42.3	0.202
19	18 22 48.80	2.0815	18 33 27.6	0.287
20	18 24 53.69	2.0816	18 33 7.8	0.372
21	18 26 58.59	2.0817	18 32 42.9	0.458
22	18 29 3.49	2.0817	18 32 12.8	0.543
23	18 31 8.40	2.0818	18 31 37.6	0.628
24	18 33 13.31	2.0818	S. 18 30 57.4	0.713

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 33 13.31	2.0818	S. 18 30 57.4	0.713
1	18 35 18.22	2.0818	18 30 12.0	0.798
2	18 37 23.13	2.0818	18 29 21.6	0.883
3	18 39 28.04	2.0818	18 28 26.0	0.969
4	18 41 32.94	2.0817	18 27 25.3	1.054
5	18 43 37.84	2.0816	18 26 19.5	1.139
6	18 45 42.73	2.0815	18 25 8.6	1.224
7	18 47 47.61	2.0813	18 23 52.6	1.309
8	18 49 52.48	2.0811	18 22 31.5	1.394
9	18 51 57.34	2.0809	18 21 5.3	1.480
10	18 54 2.19	2.0807	18 19 34.1	1.565
11	18 56 7.03	2.0805	18 17 57.8	1.651
12	18 58 11.85	2.0803	18 16 16.4	1.735
13	19 0 16.66	2.0800	18 14 30.0	1.819
14	19 2 21.45	2.0797	18 12 38.5	1.903
15	19 4 26.22	2.0793	18 10 42.0	1.987
16	19 6 30.97	2.0790	18 8 40.4	2.071
17	19 8 35.70	2.0786	18 6 33.8	2.155
18	19 10 40.40	2.0782	18 4 22.2	2.239
19	19 12 45.08	2.0778	18 2 5.5	2.324
20	19 14 49.74	2.0774	17 59 43.9	2.406
21	19 16 54.37	2.0769	17 57 17.3	2.488
22	19 18 58.97	2.0764	17 54 45.7	2.571
23	19 21 3.54	2.0759	S. 17 52 9.1	2.654

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 23 8.08	2.0754	S. 17 49 27.6	2.737
1	19 25 12.59	2.0748	17 46 41.1	2.819
2	19 27 17.06	2.0743	17 43 49.7	2.901
3	19 29 21.50	2.0737	17 40 53.3	2.982
4	19 31 25.90	2.0731	17 37 52.1	3.063
5	19 33 30.26	2.0724	17 34 45.9	3.144
6	19 35 34.59	2.0718	17 31 34.9	3.225
7	19 37 38.88	2.0712	17 28 19.0	3.306
8	19 39 43.13	2.0705	17 24 58.2	3.387
9	19 41 47.34	2.0698	17 21 32.6	3.467
10	19 43 51.50	2.0691	17 18 2.1	3.548
11	19 45 55.62	2.0683	17 14 26.8	3.628
12	19 47 59.70	2.0676	17 10 46.7	3.708
13	19 50 3.73	2.0668	17 7 1.8	3.787
14	19 52 7.71	2.0661	17 3 12.2	3.867
15	19 54 11.65	2.0653	16 59 17.8	3.946
16	19 56 15.54	2.0645	16 55 18.7	4.025
17	19 58 19.38	2.0636	16 51 14.9	4.103
18	20 0 23.17	2.0628	16 47 6.4	4.181
19	20 2 26.91	2.0619	16 42 53.2	4.259
20	20 4 30.60	2.0611	16 38 35.3	4.336
21	20 6 34.24	2.0602	16 34 12.8	4.413
22	20 8 37.82	2.0593	16 29 45.7	4.490
23	20 10 41.35	2.0584	16 25 14.0	4.567
24	20 12 44.83	2.0575	S. 16 20 37.7	4.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 12 44.83	2.0575	S. 16 20 37.7	4.643
1	20 14 48.25	2.0566	16 15 56.8	4.719
2	20 16 51.62	2.0557	16 11 11.4	4.795
3	20 18 54.93	2.0547	16 6 21.4	4.870
4	20 20 58.18	2.0538	16 1 27.0	4.946
5	20 23 1.38	2.0528	15 56 28.0	5.020
6	20 25 4.52	2.0518	15 51 24.6	5.094
7	20 27 7.60	2.0508	15 46 16.7	5.167
8	20 29 10.62	2.0499	15 41 4.5	5.241
9	20 31 13.58	2.0489	15 35 47.8	5.314
10	20 33 16.49	2.0479	15 30 26.8	5.387
11	20 35 19.34	2.0469	15 25 1.4	5.459
12	20 37 22.12	2.0459	15 19 31.7	5.531
13	20 39 24.85	2.0449	15 13 57.7	5.603
14	20 41 27.51	2.0439	15 8 19.4	5.674
15	20 43 30.12	2.0429	15 2 36.9	5.744
16	20 45 32.66	2.0419	14 56 50.1	5.814
17	20 47 35.15	2.0409	14 50 59.1	5.884
18	20 49 37.57	2.0399	14 45 4.0	5.953
19	20 51 39.93	2.0388	14 39 4.7	6.022
20	20 53 42.23	2.0378	14 33 1.3	6.091
21	20 55 44.47	2.0368	14 26 53.8	6.159
22	20 57 46.65	2.0358	14 20 42.2	6.226
23	20 59 48.77	2.0348	S. 14 14 26.6	6.293

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 1 50.82	2.0338	S. 14 8 7.0	6.360
1	21 3 52.82	2.0328	14 1 43.4	6.427
2	21 5 54.76	2.0318	13 55 15.8	6.493
3	21 7 56.64	2.0308	13 48 44.3	6.558
4	21 9 58.46	2.0298	13 42 8.8	6.623
5	21 12 0.22	2.0288	13 35 29.5	6.687
6	21 14 1.92	2.0279	13 28 46.3	6.752
7	21 16 3.56	2.0269	13 21 59.3	6.816
8	21 18 5.15	2.0260	13 15 8.4	6.879
9	21 20 6.68	2.0250	13 8 13.8	6.941
10	21 22 8.15	2.0241	13 1 15.5	7.003
11	21 24 9.56	2.0231	12 54 13.4	7.065
12	21 26 10.92	2.0222	12 47 7.7	7.126
13	21 28 12.22	2.0213	12 39 58.3	7.187
14	21 30 13.47	2.0204	12 32 45.3	7.247
15	21 32 14.67	2.0195	12 25 28.7	7.306
16	21 34 15.81	2.0186	12 18 8.6	7.365
17	21 36 16.90	2.0178	12 10 44.9	7.424
18	21 38 17.94	2.0169	12 3 17.7	7.482
19	21 40 18.93	2.0161	11 55 47.0	7.540
20	21 42 19.87	2.0152	11 48 12.9	7.597
21	21 44 20.76	2.0144	11 40 35.3	7.654
22	21 46 21.60	2.0136	11 32 54.4	7.710
23	21 48 22.39	2.0128	11 25 10.1	7.766
24	21 50 23.14	2.0121	S. 11 17 22.5	7.821

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 50 23.14	2.0121	S. 11 17 22.5	7.821
1	21 52 23.85	2.0114	11 9 31.6	7.875
2	21 54 24.51	2.0106	11 1 37.5	7.929
3	21 56 25.13	2.0099	10 53 40.1	7.983
4	21 58 25.70	2.0092	10 45 39.6	8.035
5	22 0 26.23	2.0086	10 37 35.9	8.087
6	22 2 26.73	2.0079	10 29 29.1	8.139
7	22 4 27.19	2.0073	10 21 19.2	8.190
8	22 6 27.61	2.0067	10 13 6.2	8.241
9	22 8 28.00	2.0062	10 4 50.2	8.291
10	22 10 28.35	2.0056	9 56 31.3	8.341
11	22 12 28.67	2.0051	9 48 9.4	8.390
12	22 14 28.96	2.0046	9 39 44.5	8.439
13	22 16 29.22	2.0041	9 31 16.7	8.487
14	22 18 29.45	2.0037	9 22 46.1	8.534
15	22 20 29.66	2.0033	9 14 12.7	8.581
16	22 22 29.84	2.0028	9 5 36.5	8.627
17	22 24 30.00	2.0024	8 56 57.5	8.673
18	22 26 30.13	2.0021	8 48 15.8	8.718
19	22 28 30.24	2.0018	8 39 31.4	8.762
20	22 30 30.34	2.0015	8 30 44.4	8.806
21	22 32 30.42	2.0012	8 21 54.7	8.849
22	22 34 30.48	2.0010	8 13 2.5	8.892
23	22 36 30.53	2.0008	S. 8 4 7.7	8.934

SATURDAY 20

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 38 30.57	2.0006	S. 7 55 10.4	8.976
1	22 40 30.60	2.0004	7 46 10.6	9.017
2	22 42 30.62	2.0003	7 37 8.4	9.057
3	22 44 30.64	2.0002	7 28 3.8	9.097
4	22 46 30.65	2.0002	7 18 56.8	9.136
5	22 48 30.66	2.0002	7 9 47.5	9.175
6	22 50 30.67	2.0003	7 0 35.8	9.213
7	22 52 30.68	2.0003	6 51 21.9	9.250
8	22 54 30.70	2.0004	6 42 5.8	9.287
9	22 56 30.73	2.0005	6 32 47.5	9.323
10	22 58 30.76	2.0006	6 23 27.0	9.359
11	23 0 30.80	2.0008	6 14 4.4	9.394
12	23 2 30.86	2.0010	6 4 39.8	9.428
13	23 4 30.93	2.0013	5 55 13.1	9.462
14	23 6 31.02	2.0016	5 45 44.4	9.496
15	23 8 31.12	2.0019	5 36 13.8	9.527
16	23 10 31.25	2.0023	5 26 41.2	9.559
17	23 12 31.40	2.0028	5 17 6.7	9.590
18	23 14 31.58	2.0033	5 7 30.4	9.620
19	23 16 31.79	2.0038	4 57 52.3	9.650
20	23 18 32.03	2.0043	4 48 12.4	9.679
21	23 20 32.30	2.0048	4 38 30.7	9.708
22	23 22 32.61	2.0054	4 28 47.4	9.736
23	23 24 32.95	2.0061	4 19 2.4	9.764
24	23 26 33.34	2.0068	S. 4 9 15.7	9.791

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 26 33.34	2.0068	S. 4 9 15.7	9.791
1	23 28 33.77	2.0075	3 59 27.5	9.817
2	23 30 34.24	2.0083	3 49 37.7	9.842
3	23 32 34.76	2.0091	3 39 46.4	9.867
4	23 34 35.33	2.0099	3 29 53.7	9.891
5	23 36 35.95	2.0108	3 19 59.5	9.914
6	23 38 36.63	2.0118	3 10 4.0	9.936
7	23 40 37.37	2.0128	3 0 7.1	9.958
8	23 42 38.17	2.0138	2 50 9.0	9.979
9	23 44 39.03	2.0149	2 40 9.6	10.000
10	23 46 39.96	2.0161	2 30 9.0	10.020
11	23 48 40.96	2.0173	2 20 7.2	10.040
12	23 50 42.03	2.0185	2 10 4.2	10.059
13	23 52 43.17	2.0197	2 0 0.1	10.077
14	23 54 44.39	2.0210	1 49 55.1	10.094
15	23 56 45.69	2.0223	1 39 49.0	10.111
16	23 58 47.07	2.0237	1 29 41.9	10.127
17	0 0 48.54	2.0252	1 19 33.8	10.142
18	0 2 50.09	2.0267	1 9 24.9	10.156
19	0 4 51.74	2.0283	0 59 15.2	10.169
20	0 6 53.48	2.0298	0 49 4.6	10.182
21	0 8 55.31	2.0314	0 38 53.3	10.195
22	0 10 57.25	2.0331	0 28 41.2	10.207
23	0 12 59.29	2.0349	S. 0 18 28.5	10.218

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 15 1.44	2.0367	S. 0 8 15.0	10.228
1	0 17 3.69	2.0385	N. 0 1 58.9	10.237
2	0 19 6.06	2.0404	0 12 13.4	10.245
3	0 21 8.54	2.0423	0 22 28.4	10.253
4	0 23 11.13	2.0443	0 32 43.8	10.260
5	0 25 13.84	2.0463	0 42 59.6	10.266
6	0 27 16.68	2.0483	0 53 15.7	10.271
7	0 29 19.64	2.0504	1 3 32.2	10.276
8	0 31 22.73	2.0526	1 13 48.9	10.280
9	0 33 25.95	2.0548	1 24 5.8	10.283
10	0 35 29.31	2.0571	1 34 22.9	10.285
11	0 37 32.80	2.0594	1 44 40.1	10.287
12	0 39 36.44	2.0618	1 54 57.4	10.287
13	0 41 40.22	2.0642	2 5 14.7	10.288
14	0 43 44.14	2.0667	2 15 32.0	10.287
15	0 45 48.21	2.0692	2 25 49.2	10.286
16	0 47 52.44	2.0717	2 36 6.3	10.284
17	0 49 56.82	2.0743	2 46 23.3	10.281
18	0 52 1.36	2.0770	2 56 40.0	10.277
19	0 54 6.06	2.0798	3 6 56.5	10.272
20	0 56 10.93	2.0825	3 17 12.6	10.266
21	0 58 15.96	2.0853	3 27 28.4	10.259
22	1 0 21.17	2.0882	3 37 43.7	10.252
23	1 2 26.55	2.0911	3 47 58.6	10.244
24	1 4 32.10	2.0941	N. 3 58 13.0	10.235

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 4 32.10	2.0941	N. 3 58 13.0	10.235
1	1 6 37.83	2.0971	4 8 26.8	10.225
2	1 8 43.75	2.1002	4 18 40.0	10.214
3	1 10 49.85	2.1033	4 28 52.5	10.203
4	1 12 56.14	2.1065	4 39 4.3	10.191
5	1 15 2.62	2.1097	4 49 15.3	10.177
6	1 17 9.30	2.1129	4 59 25.5	10.162
7	1 19 16.17	2.1162	5 9 34.8	10.147
8	1 21 23.24	2.1196	5 19 43.1	10.130
9	1 23 30.52	2.1230	5 29 50.4	10.113
10	1 25 38.00	2.1264	5 39 56.7	10.095
11	1 27 45.69	2.1299	5 50 1.9	10.077
12	1 29 53.59	2.1335	6 0 5.9	10.058
13	1 32 1.71	2.1371	6 10 8.7	10.037
14	1 34 10.04	2.1408	6 20 10.3	10.016
15	1 36 18.60	2.1445	6 30 10.5	9.993
16	1 38 27.38	2.1482	6 40 9.3	9.968
17	1 40 36.39	2.1520	6 50 6.7	9.943
18	1 42 45.62	2.1558	7 0 2.5	9.917
19	1 44 55.09	2.1597	7 9 56.8	9.891
20	1 47 4.79	2.1637	7 19 49.4	9.864
21	1 49 14.73	2.1677	7 29 40.4	9.836
22	1 51 24.91	2.1717	7 39 29.6	9.806
23	1 53 35.34	2.1758	N. 7 49 17.0	9.775

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 55 46.01	2.1799	N. 7 59 2.6	9.744
1	1 57 56.92	2.1840	8 8 46.2	9.711
2	2 0 8.09	2.1882	8 18 27.9	9.677
3	2 2 19.51	2.1925	8 28 7.5	9.643
4	2 4 31.19	2.1968	8 37 45.0	9.607
5	2 6 43.12	2.2011	8 47 20.3	9.570
6	2 8 55.32	2.2054	8 56 53.4	9.532
7	2 11 7.78	2.2098	9 6 24.2	9.494
8	2 13 20.50	2.2143	9 15 52.7	9.454
9	2 15 33.49	2.2188	9 25 18.7	9.413
10	2 17 46.75	2.2233	9 34 42.3	9.371
11	2 20 0.28	2.2278	9 44 3.3	9.329
12	2 22 14.09	2.2324	9 53 21.8	9.285
13	2 24 28.18	2.2371	10 2 37.5	9.239
14	2 26 42.54	2.2417	10 11 50.5	9.192
15	2 28 57.18	2.2464	10 21 0.6	9.145
16	2 31 12.11	2.2511	10 30 7.9	9.097
17	2 33 27.32	2.2559	10 39 12.2	9.047
18	2 35 42.82	2.2607	10 48 13.5	8.996
19	2 37 58.60	2.2655	10 57 11.7	8.943
20	2 40 14.68	2.2704	11 6 6.7	8.890
21	2 42 31.05	2.2753	11 14 58.5	8.837
22	2 44 47.71	2.2802	11 23 47.1	8.782
23	2 47 4.67	2.2852	11 32 32.3	8.724
24	2 49 21.93	2.2901	N.11 41 14.0	8.666

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 49 21.93	2.2901	N.11 41 14.0	8.666
1	2 51 39.48	2.2951	11 49 52.3	8.608
2	2 53 57.34	2.3002	11 58 27.0	8.548
3	2 56 15.50	2.3052	12 6 58.1	8.487
4	2 58 33.96	2.3102	12 15 25.4	8.425
5	3 0 52.72	2.3153	12 23 49.0	8.362
6	3 3 11.79	2.3203	12 32 8.8	8.297
7	3 5 31.16	2.3254	12 40 24.6	8.231
8	3 7 50.84	2.3305	12 48 36.5	8.164
9	3 10 10.83	2.3357	12 56 44.3	8.096
10	3 12 31.12	2.3408	13 4 48.0	8.027
11	3 14 51.72	2.3460	13 12 47.5	7.956
12	3 17 12.64	2.3511	13 20 42.7	7.884
13	3 19 33.86	2.3563	13 28 33.6	7.811
14	3 21 55.40	2.3615	13 36 20.0	7.737
15	3 24 17.24	2.3667	13 44 2.0	7.662
16	3 26 39.40	2.3719	13 51 39.4	7.585
17	3 29 1.87	2.3771	13 59 12.2	7.507
18	3 31 24.65	2.3823	14 6 40.2	7.428
19	3 33 47.74	2.3876	14 14 3.5	7.348
20	3 36 11.15	2.3927	14 21 22.0	7.267
21	3 38 34.86	2.3978	14 28 35.5	7.184
22	3 40 58.89	2.4030	14 35 44.1	7.100
23	3 43 23.23	2.4083	N.14 42 47.6	7.015

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 45 47.88	2.4134	N.14 49 45.9	6.929
1	3 48 12.84	2.4185	14 56 39.0	6.842
2	3 50 38.10	2.4237	15 3 26.9	6.753
3	3 53 3.68	2.4288	15 10 9.4	6.663
4	3 55 29.56	2.4339	15 16 46.5	6.572
5	3 57 55.75	2.4390	15 23 18.1	6.481
6	4 0 22.24	2.4441	15 29 44.2	6.388
7	4 2 49.03	2.4491	15 36 4.6	6.293
8	4 5 16.13	2.4541	15 42 19.3	6.197
9	4 7 43.53	2.4591	15 48 28.3	6.101
10	4 10 11.22	2.4641	15 54 31.4	6.003
11	4 12 39.21	2.4690	16 0 28.6	5.903
12	4 15 7.50	2.4739	16 6 19.8	5.803
13	4 17 36.08	2.4788	16 12 5.0	5.702
14	4 20 4.96	2.4836	16 17 44.0	5.600
15	4 22 34.12	2.4884	16 23 16.9	5.496
16	4 25 3.57	2.4932	16 28 43.5	5.391
17	4 27 33.31	2.4979	16 34 3.8	5.285
18	4 30 3.32	2.5026	16 39 17.7	5.178
19	4 32 33.61	2.5072	16 44 25.2	5.070
20	4 35 4.18	2.5118	16 49 26.1	4.961
21	4 37 35.02	2.5163	16 54 20.5	4.851
22	4 40 6.13	2.5208	16 59 8.2	4.740
23	4 42 37.51	2.5252	17 3 49.2	4.628
24	4 45 9.15	2.5295	N.17 8 23.5	4.515

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 45 9.15	2.5295	N.17 8 23.5	4.515
1	4 47 41.05	2.5338	17 12 50.9	4.401
2	4 50 13.21	2.5381	17 17 11.5	4.286
3	4 52 45.62	2.5423	17 21 25.1	4.171
4	4 55 18.28	2.5464	17 25 31.8	4.054
5	4 57 51.18	2.5504	17 29 31.4	3.936
6	5 0 24.33	2.5544	17 33 23.9	3.816
7	5 2 57.71	2.5583	17 37 9.2	3.696
8	5 5 31.33	2.5621	17 40 47.3	3.576
9	5 8 5.17	2.5659	17 44 18.1	3.455
10	5 10 39.24	2.5696	17 47 41.7	3.333
11	5 13 13.52	2.5732	17 50 57.8	3.209
12	5 15 48.02	2.5767	17 54 6.7	3.084
13	5 18 22.73	2.5802	17 57 8.0	2.959
14	5 20 57.64	2.5836	18 0 1.8	2.833
15	5 23 32.75	2.5869	18 2 48.0	2.707
16	5 26 8.06	2.5901	18 5 26.6	2.580
17	5 28 43.56	2.5932	18 7 57.5	2.452
18	5 31 19.24	2.5962	18 10 20.8	2.323
19	5 33 55.10	2.5991	18 12 36.3	2.193
20	5 36 31.13	2.6019	18 14 43.9	2.063
21	5 39 7.33	2.6047	18 16 43.7	1.932
22	5 41 43.69	2.6073	18 18 35.7	1.801
23	5 44 20.20	2.6098	N.18 20 19.8	1.670

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 46 56.87	2.6123	N.18 21 56.1	1.538
1	5 49 33.68	2.6147	18 23 24.4	1.405
2	5 52 10.63	2.6169	18 24 44.7	1.272
3	5 54 47.71	2.6191	18 25 57.0	1.138
4	5 57 24.92	2.6211	18 27 1.3	1.004
5	6 0 2.24	2.6230	18 27 57.5	0.870
6	6 2 39.68	2.6248	18 28 45.7	0.736
7	6 5 17.22	2.6266	18 29 25.8	0.601
8	6 7 54.87	2.6282	18 29 57.8	0.466
9	6 10 32.61	2.6298	18 30 21.7	0.330
10	6 13 10.44	2.6311	18 30 37.4	0.194
11	6 15 48.35	2.6324	18 30 45.0	0.058
12	6 18 26.33	2.6336	18 30 44.4	0.078
13	6 21 4.38	2.6347	18 30 35.5	0.215
14	6 23 42.49	2.6356	18 30 18.5	0.352
15	6 26 20.66	2.6365	18 29 53.3	0.489
16	6 28 58.87	2.6372	18 29 19.9	0.626
17	6 31 37.12	2.6378	18 28 38.3	0.763
18	6 34 15.41	2.6383	18 27 48.4	0.900
19	6 36 53.72	2.6388	18 26 50.3	1.037
20	6 39 32.06	2.6390	18 25 44.0	1.174
21	6 42 10.41	2.6392	18 24 29.5	1.310
22	6 44 48.76	2.6393	18 23 6.8	1.447
23	6 47 27.12	2.6393	18 21 35.9	1.583
24	6 50 5.47	2.6391	N.18 19 56.8	1.720

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 50 5.47	2.6391	N.18 19 56.8	1.720
1	6 52 43.81	2.6389	18 18 9.5	1.856
2	6 55 22.14	2.6386	18 16 14.1	1.992
3	6 58 0.44	2.6381	18 14 10.5	2.128
4	7 0 38.71	2.6374	18 11 58.8	2.263
5	7 3 16.93	2.6365	18 9 38.9	2.398
6	7 5 55.09	2.6356	18 7 11.0	2.533
7	7 8 33.20	2.6347	18 4 35.0	2.667
8	7 11 11.25	2.6336	18 1 51.0	2.801
9	7 13 49.22	2.6323	17 58 58.9	2.935
10	7 16 27.12	2.6309	17 55 58.8	3.068
11	7 19 4.93	2.6295	17 52 50.8	3.200
12	7 21 42.66	2.6281	17 49 34.8	3.332
13	7 24 20.30	2.6266	17 46 10.9	3.463
14	7 26 57.85	2.6249	17 42 39.2	3.594
15	7 29 35.30	2.6232	17 38 59.6	3.724
16	7 32 12.63	2.6212	17 35 12.3	3.854
17	7 34 49.84	2.6192	17 31 17.2	3.983
18	7 37 26.93	2.6171	17 27 14.4	4.111
19	7 40 3.89	2.6149	17 23 3.9	4.238
20	7 42 40.72	2.6126	17 18 45.8	4.364
21	7 45 17.40	2.6102	17 14 20.2	4.490
22	7 47 53.94	2.6077	17 9 47.0	4.615
23	7 50 30.32	2.6051	N.17 5 6.4	4.739

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 53 6.55	2.6024	N.17 0 18.3	4.862
1	7 55 42.61	2.5996	16 55 22.9	4.984
2	7 58 18.50	2.5967	16 50 20.2	5.105
3	8 0 54.22	2.5938	16 45 10.2	5.226
4	8 3 29.75	2.5907	16 39 53.1	5.346
5	8 6 5.10	2.5876	16 34 28.8	5.464
6	8 8 40.26	2.5844	16 28 57.4	5.581
7	8 11 15.23	2.5811	16 23 19.0	5.697
8	8 13 49.99	2.5777	16 17 33.7	5.812
9	8 16 24.55	2.5743	16 11 41.5	5.927
10	8 18 58.90	2.5708	16 5 42.4	6.041
11	8 21 33.04	2.5672	15 59 36.6	6.153
12	8 24 6.96	2.5635	15 53 24.1	6.264
13	8 26 40.66	2.5598	15 47 4.9	6.374
14	8 29 14.13	2.5560	15 40 39.2	6.483
15	8 31 47.37	2.5521	15 34 7.0	6.590
16	8 34 20.38	2.5482	15 27 28.4	6.696
17	8 36 53.15	2.5442	15 20 43.4	6.802
18	8 39 25.68	2.5402	15 13 52.2	6.906
19	8 41 57.97	2.5361	15 6 54.8	7.008
20	8 44 30.01	2.5319	14 59 51.2	7.109
21	8 47 1.80	2.5277	14 52 41.6	7.210
22	8 49 33.33	2.5234	14 45 26.0	7.309
23	8 52 4.61	2.5191	14 38 4.5	7.407
24	8 54 35.62	2.5147	N.14 30 37.2	7.503

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 54 35.62	2.5147	N.14 30 37.2	7.503
1	8 57 6.37	2.5103	14 23 4.2	7.598
2	8 59 36.85	2.5058	14 15 25.5	7.691
3	9 2 7.07	2.5013	14 7 41.3	7.783
4	9 4 37.01	2.4968	13 59 51.5	7.873
5	9 7 6.68	2.4922	13 51 56.4	7.963
6	9 9 36.07	2.4876	13 43 55.9	8.051
8	9 12 5.19	2.4830	13 35 50.2	8.138
8	9 14 34.03	2.4783	13 27 39.4	8.223
9	9 17 2.59	2.4736	13 19 23.5	8.307
10	9 19 30.86	2.4689	13 11 2.6	8.389
11	9 21 58.85	2.4641	13 2 36.8	8.470
12	9 24 26.55	2.4593	12 54 6.2	8.550
13	9 26 53.97	2.4545	12 45 30.8	8.628
14	9 29 21.09	2.4497	12 36 50.8	8.705
15	9 31 47.92	2.4448	12 28 6.2	8.780
16	9 34 14.46	2.4399	12 19 17.2	8.854
17	9 36 40.71	2.4350	12 10 23.8	8.927
18	9 39 6.66	2.4302	12 1 26.0	8.998
19	9 41 32.32	2.4253	11 52 24.0	9.068
20	9 43 57.69	2.4204	11 43 17.9	9.136
21	9 46 22.76	2.4154	11 34 7.7	9.203
22	9 48 47.54	2.4105	11 24 53.5	9.268
23	9 51 12.02	2.4056	N.11 15 35.5	9.332

THURSDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 53 36.20	2.4006	N.11 6 13.7	9.394

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	1	9	48.4
☽ First Quarter, . .	8	5	31.5
○ Full Moon, . . .	16	7	55.8
☾ Last Quarter, . .	24	2	36.0
● New Moon, . .	30	16	43.1

	d	h
☾ Perigee, ...	1	3.4
☾ Apogee, ...	14	7.0
☾ Perigee, ...	29	11.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
3	Sun	W.	22° 51′ 58″	2431	24° 34′ 48″	2433	26° 17′ 35″	2438	28° 0′ 16″	2443
	Spica	E.	78 14 39	2072	76 22 57	2085	74 31 34	2097	72 40 30	2109
	Saturn	E.	104 10 17	2050	102 18 0	2062	100 26 2	2073	98 34 22	2086
4	Sun	W.	36 30 50	2497	38 12 8	2510	39 53 7	2525	41 33 45	2540
	Spica	E.	63 30 26	2184	61 41 35	2200	59 58 8	2217	58 5 6	2236
	Saturn	E.	89 21 11	2158	87 31 40	2174	85 42 33	2190	83 53 50	2206
	Antares	E.	109 12 6	2231	107 24 24	2243	105 37 4	2260	103 50 6	2275
5	Sun	W.	49 51 23	2626	51 29 43	2643	53 7 39	2662	54 45 10	2681
	Spica	E.	49 11 34	2328	47 26 15	2347	45 41 24	2367	43 57 2	2388
	Saturn	E.	74 56 31	2293	73 10 21	2311	71 24 37	2330	69 39 21	2348
	Antares	E.	95 1 6	2359	93 16 32	2377	91 32 24	2394	89 48 41	2413
6	Sun	W.	62 46 25	2776	64 21 24	2796	65 55 57	2815	67 30 5	2835
	Regulus	W.	18 41 21	2470	20 23 16	2485	22 4 51	2500	23 46 4	2516
	Spica	E.	35 22 44	2497	33 41 26	2520	32 0 41	2544	30 20 29	2569
	Saturn	E.	60 59 37	2441	59 17 0	2460	57 34 50	2479	55 53 7	2497
	Antares	E.	81 16 46	2507	79 35 43	2527	77 55 7	2546	76 14 58	2566
7	Sun	W.	75 14 29	2931	76 46 9	2950	78 17 25	2969	79 48 17	2988
	Regulus	W.	32 6 26	2600	33 45 21	2616	35 23 54	2633	37 2 4	2651
	Mars	W.	21 13 23	2802	22 47 48	2819	24 21 51	2836	25 55 32	2853
	Saturn	E.	47 30 56	2589	45 51 46	2607	44 13 0	2625	42 34 39	2643
	Antares	E.	68 0 52	2663	66 23 22	2682	64 46 18	2701	63 9 40	2721
	α Aquilæ	E.	115 2 22	3142	113 35 3	3145	112 7 48	3150	110 40 39	3157
8	Sun	W.	87 17 5	3074	88 45 46	3091	90 14 6	3108	91 42 6	3124
	Regulus	W.	45 7 18	2730	46 43 18	2746	48 18 57	2760	49 54 17	2775
	Mars	W.	33 38 36	2935	35 10 10	2951	36 41 24	2966	38 12 18	2982
	Saturn	E.	34 28 44	2729	32 52 42	2744	31 17 1	2760	29 41 40	2778
	Antares	E.	55 12 56	2818	53 38 52	2838	52 5 13	2857	50 31 59	2876
	α Aquilæ	E.	103 27 5	3198	102 0 53	3208	100 34 53	3218	99 9 5	3229
9	Sun	W.	98 57 24	3199	100 23 34	3213	101 49 28	3226	103 15 6	3240
	Regulus	W.	57 46 14	2845	59 19 44	2857	60 52 58	2869	62 25 56	2881
	Mars	W.	45 42 9	3055	47 11 15	3068	48 40 4	3081	50 8 37	3093
	Antares	E.	42 52 11	2979	41 21 32	3001	39 51 20	3022	38 21 35	3046
	α Aquilæ	E.	92 3 26	3288	90 39 1	3300	89 14 50	3313	87 50 54	3326
10	Sun	W.	110 19 30	3300	111 43 41	3311	113 7 40	3322	114 31 26	3332
	Regulus	W.	70 7 6	2935	71 38 40	2946	73 10 1	2956	74 41 10	2964
	Mars	W.	57 27 42	3151	58 54 50	3161	60 21 46	3171	61 48 30	3180
	Spica	W.	17 10 57	3114	18 38 49	3099	20 7 0	3088	21 35 24	3079
	Antares	E.	31 0 30	3183	29 34 1	3219	28 8 14	3257	26 43 12	3300
	α Aquilæ	E.	80 55 4	3395	79 32 42	3409	78 10 36	3424	76 48 47	3439
	Jupiter	E.	119 9 57	2920	117 38 4	2930	116 6 24	2939	114 34 55	2948
11	Sun	W.	121 27 34	3377	122 50 17	3384	124 12 52	3392	125 35 18	3399
	Regulus	W.	82 14 16	3004	83 44 24	3010	85 14 24	3017	86 44 16	3023
	Mars	W.	68 59 29	3222	70 25 12	3229	71 50 47	3236	73 16 14	3242
	Spica	W.	28 59 1	3069	30 27 48	3070	31 56 34	3072	33 25 18	3073
	α Aquilæ	E.	70 4 3	3520	68 44 1	3538	67 24 19	3555	66 4 56	3575
	Fomalhaut	E.	102 36 46	3354	101 13 37	3357	99 50 31	3360	98 27 29	3365
	Jupiter	E.	107 0 9	2987	105 29 40	2993	103 59 19	3000	102 29 6	3005

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
3	Sun	W.	29° 42′ 49″	2451	31° 25′ 11″	2460	33° 7′ 20″	2472	34° 49′ 13″	2483
	Spica	E.	70 49 45	2124	68 59 22	2137	67 9 20	2153	65 19 41	2169
	Saturn	E.	96 43 1	2100	94 52 2	2113	93 1 23	2128	91 11 6	2142
4	Sun	W.	43 14 2	2556	44 53 57	2573	46 33 29	2590	48 12 38	2607
	Spica	E.	56 17 30	2252	54 30 20	2270	52 43 37	2289	50 57 22	2308
	Saturn	E.	82 5 31	2223	80 17 38	2240	78 30 10	2257	76 43 7	2275
	Antares	E.	102 3 30	2291	100 17 18	2307	98 31 29	2324	96 46 5	2342
5	Sun	W.	56 22 16	2700	57 58 56	2719	59 35 11	2738	61 11 1	2757
	Spica	E.	42 13 10	2409	40 29 48	2430	38 46 56	2451	37 4 34	2474
	Saturn	E.	67 54 31	2366	66 10 8	2384	64 26 11	2403	62 42 40	2422
	Antares	E.	88 5 25	2431	86 22 35	2450	84 40 12	2470	82 58 16	2488
6	Sun	W.	69 3 47	2855	70 37 4	2873	72 9 57	2893	73 42 25	2912
	Regulus	W.	25 26 55	2533	27 7 23	2550	28 47 27	2566	30 27 8	2583
	Spica	E.	28 40 52	2596	27 1 52	2624	25 23 30	2653	23 45 47	2683
	Saturn	E.	54 11 49	2516	52 30 58	2534	50 50 32	2552	49 10 31	2571
	Antares	E.	74 35 16	2585	72 56 0	2604	71 17 11	2624	69 38 48	2643
7	Sun	W.	81 18 47	3004	82 48 55	3022	84 18 40	3040	85 48 3	3057
	Regulus	W.	38 39 50	2667	40 17 14	2683	41 54 17	2699	43 30 58	2716
	Mars	W.	27 28 51	2869	29 1 49	2887	30 34 26	2903	32 6 41	2919
	Saturn	E.	40 56 41	2660	39 19 8	2677	37 41 57	2694	36 5 9	2711
	Antares	E.	61 33 28	2741	59 57 42	2760	58 22 21	2779	56 47 26	2798
	α Aquilæ	E.	109 13 38	3163	107 46 45	3172	106 20 2	2179	104 53 28	3188
8	Sun	W.	93 9 47	3139	94 37 9	3155	96 4 12	3170	97 30 57	3185
	Regulus	W.	51 29 17	2790	53 3 58	2804	54 38 21	2818	56 12 26	2831
	Mars	W.	39 42 53	2997	41 13 9	3012	42 43 7	3026	44 12 47	3041
	Saturn	E.	28 6 43	2793	26 32 6	2809	24 57 50	2825	23 23 55	2841
	Antares	E.	48 59 10	2897	47 26 47	2916	45 54 49	2937	44 23 17	2958
	α Aquilæ	E.	97 43 30	3240	96 18 8	3252	94 53 0	3264	93 28 6	3276
9	Sun	W.	104 40 28	3253	106 5 35	3265	107 30 27	3277	108 55 5	3288
	Regulus	W.	63 58 39	2893	65 31 7	2905	67 3 20	2915	68 35 20	2926
	Mars	W.	51 36 55	3105	53 4 57	3117	54 32 46	3129	56 0 21	3140
	Antares	E.	36 52 19	3070	35 23 33	3096	33 55 19	3123	32 27 37	3152
	α Aquilæ	E.	86 27 13	3339	85 3 47	3353	83 40 37	3367	82 17 43	3380
10	Sun	W.	115 55 1	3341	117 18 25	3351	118 41 38	3359	120 4 41	3368
	Regulus	W.	76 12 8	2973	77 42 55	2981	79 13 32	2989	80 43 59	2997
	Mars	W.	63 15 3	3189	64 41 24	3198	66 7 36	3207	67 33 37	3214
	Spica	W.	23 3 59	3074	24 32 40	3070	26 1 26	3069	27 30 13	3069
	Antares	E.	25 19 0	3349	23 55 45	3405	22 33 34	3469	21 12 35	3546
	α Aquilæ	E.	75 27 15	3454	74 6 0	3471	72 45 3	3487	71 24 24	3503
	Jupiter	E.	113 3 38	2957	111 32 31	2965	110 1 34	2973	108 30 47	2980
11	Sun	W.	126 57 36	3406	128 19 46	3412	129 41 49	3418	131 3 45	3423
	Regulus	W.	88 14 0	3029	89 43 37	3034	91 13 8	3039	92 42 32	3043
	Mars	W.	74 41 33	3248	76 6 45	3254	77 31 50	3260	78 56 49	3266
	Spica	W.	34 54 0	3075	36 22 40	3077	37 51 18	3079	39 19 53	3082
	α Aquilæ	E.	64 45 54	3594	63 27 13	3615	62 8 55	3636	60 51 0	3659
	Fomalhaut	E.	97 4 32	3368	95 41 39	3371	94 18 49	3374	92 56 3	3379
	Jupiter	E.	100 59 0	3011	99 29 1	3017	97 59 9	3022	96 29 23	3026

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
12	SUN W.	132° 25′ 35″	3430	133° 47′ 18″	3435	135° 8′ 55″	3439	136° 30′ 27″	3445
	Mars W.	80 21 42	3269	81 46 30	3273	83 11 13	3277	84 35 51	3281
	Spica W.	40 48 25	3084	42 16 54	3085	43 45 22	3087	45 13 47	3089
	a Aquilæ E.	59 33 29	3682	58 16 23	3708	56 59 44	3734	55 43 33	3763
	Fomalhaut E.	91 33 22	3382	90 10 45	3386	88 48 12	3390	87 25 44	3394
	Jupiter E.	94 59 42	3030	93 30 7	3034	92 0 36	3038	90 31 10	3041
13	Mars W.	91 38 7	3294	93 2 26	3295	94 26 43	3297	95 50 58	3298
	Spica W.	52 35 26	3095	54 3 42	3096	55 31 57	3096	57 0 12	3096
	Saturn W.	26 44 28	3079	28 13 3	3078	29 41 39	3080	31 10 13	3079
	a Aquilæ E.	49 30 34	3934	48 17 49	3976	47 5 46	4023	45 54 29	4073
	Fomalhaut E.	80 34 38	3416	79 12 40	3422	77 50 48	3427	76 29 2	3432
	Jupiter E.	83 4 50	3052	81 35 41	3054	80 6 35	3055	78 37 30	3056
14	Mars W.	102 52 1	3300	104 16 13	3299	105 40 25	3299	107 4 39	3298
	Spica W.	64 21 24	3095	65 49 40	3094	67 17 57	3092	68 46 16	3091
	Saturn W.	38 33 10	3078	40 1 47	3077	41 30 25	3076	42 59 4	3075
	Fomalhaut E.	69 41 51	3464	68 20 47	3471	66 59 51	3480	65 39 4	3488
	Jupiter E.	71 12 17	3057	69 43 15	3056	68 14 12	3056	66 45 8	3058
	a Pegasi E.	84 12 50	3344	82 49 29	3346	81 26 10	3347	80 2 53	3348
15	Spica W.	76 8 16	3082	77 36 47	3080	79 5 21	3078	80 33 57	3075
	Saturn W.	50 22 45	3066	51 51 36	3064	53 20 30	3062	54 49 26	3060
	Antares W.	31 21 0	3289	32 45 24	3270	34 10 11	3253	35 35 17	3237
	Fomalhaut E.	58 57 51	3544	57 38 15	3557	56 18 54	3573	54 59 50	3588
	Jupiter E.	59 19 27	3047	57 50 13	3045	56 20 55	3043	54 51 35	3040
	a Pegasi E.	73 6 58	3360	71 43 56	3363	70 20 57	3366	68 58 2	3370
	a Arietis E.	116 26 21	3225	115 0 41	3218	113 34 53	3212	112 8 58	3207
16	Spica W.	87 57 51	3060	89 26 49	3056	90 55 52	3053	92 24 59	3050
	Saturn W.	62 15 0	3043	63 44 19	3041	65 13 41	3038	66 43 7	3035
	Antares W.	42 44 58	3175	44 11 37	3165	45 38 28	3155	47 5 31	3145
	Jupiter E.	47 24 7	3026	45 54 26	3022	44 24 41	3019	42 54 52	3016
	Fomalhaut E.	48 29 29	3697	47 12 39	3727	45 56 20	3759	44 40 35	3793
	a Pegasi E.	62 4 42	3396	60 42 21	3403	59 20 8	3411	57 58 4	3420
	a Arietis E.	104 57 48	3180	103 31 15	3175	102 4 36	3170	100 37 51	3165
17	Spica W.	99 51 45	3029	101 21 22	3025	102 51 4	3020	104 20 52	3015
	Saturn W.	74 11 35	3012	75 41 33	3008	77 11 36	3003	78 41 45	2997
	Antares W.	54 23 29	3103	55 51 35	3096	57 19 50	3087	58 48 15	3081
	Jupiter E.	35 24 37	2996	33 54 20	2992	32 23 57	2988	30 53 29	2984
	Fomalhaut E.	38 32 23	4042	37 21 25	4112	36 11 35	4189	35 2 59	4278
	a Pegasi E.	51 10 36	3481	49 49 51	3497	48 29 24	3515	47 9 17	3537
	a Arietis E.	93 22 37	3141	91 55 17	3135	90 27 50	3130	89 0 17	3126
18	Saturn W.	86 14 7	2971	87 44 56	2965	89 15 52	2961	90 46 54	2954
	Antares W.	66 12 35	3043	67 41 55	3036	69 11 23	3028	70 41 1	3021
	a Pegasi E.	40 35 29	3687	39 18 28	3728	38 2 11	3776	36 46 44	3833
	a Arietis E.	81 41 9	3102	80 13 2	3098	78 44 50	3093	77 16 32	3088
19	Saturn W.	98 24 10	2921	99 56 2	2914	101 28 3	2907	103 0 13	2899
	Antares W.	78 11 29	2983	79 42 3	2976	81 12 46	2967	82 43 40	2960
	a Aquilæ W.	37 4 50	4430	38 9 44	4321	39 16 17	4222	40 24 22	4133
	a Arietis E.	69 53 42	3068	68 24 53	3065	66 56 0	3060	65 27 2	3056
	Aldebaran E.	102 6 41	2919	100 34 46	2912	99 2 43	2905	97 30 30	2897

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
12	Sun W.	137° 51′ 53″	3449	139° 13′ 14″	3454	140° 34′ 30″	3457	141° 55′ 42″	3462
	Mars W.	86 0 25	3284	87 24 55	3287	88 49 22	3289	90 13 46	3292
	Spica W.	46 42 10	3091	48 10 31	3091	49 38 51	3093	51 7 9	3094
	α Aquilæ E.	54 27 51	3792	53 12 40	3823	51 58 2	3857	50 43 59	3895
	Fomalhaut E.	86 3 21	3399	84 41 3	3403	83 18 50	3408	81 56 42	3411
	Jupiter E.	89 1 47	3043	87 32 28	3046	86 3 12	3048	84 33 59	3051
13	Mars W.	97 15 12	3299	98 39 25	3300	100 3 37	3300	101 27 49	3300
	Spica W.	58 28 26	3096	59 56 40	3096	61 24 54	3096	62 53 9	3096
	Saturn W.	32 38 48	3079	34 7 23	3079	35 35 58	3078	37 4 34	3078
	α Aquilæ E.	44 44 1	4129	43 34 27	4188	42 25 50	4254	41 18 15	4327
	Fomalhaut E.	75 7 22	3438	73 45 49	3444	72 24 22	3451	71 3 3	3457
	Jupiter E.	77 8 27	3056	75 39 24	3057	74 10 21	3057	72 41 20	3057
14	Mars W.	108 28 53	3297	109 53 8	3296	111 17 25	3294	112 41 44	3292
	Spica W.	70 14 36	3090	71 42 58	3088	73 11 22	3087	74 39 48	3085
	Saturn W.	44 27 44	3073	45 56 27	3072	47 25 11	3071	48 53 56	3068
	Fomalhaut E.	64 18 27	3496	62 58 1	3507	61 37 45	3518	60 17 41	3531
	Jupiter E.	65 16 3	3054	63 46 57	3052	62 17 49	3051	60 48 39	3049
	α Pegasi E.	78 39 37	3350	77 16 23	3352	75 53 12	3355	74 30 4	3357
15	Spica W.	82 2 37	3073	83 31 20	3069	85 0 7	3067	86 28 57	3064
	Saturn W.	56 18 26	3056	57 47 29	3053	59 16 36	3051	60 45 46	3047
	Antares W.	37 0 42	3223	38 26 24	3210	39 52 21	3198	41 18 33	3187
	Fomalhaut E.	53 41 3	3607	52 22 36	3626	51 4 30	3648	49 46 47	3671
	Jupiter E.	53 22 12	3038	51 52 46	3034	50 23 17	3032	48 53 44	3029
	α Pegasi E.	67 35 11	3374	66 12 25	3379	64 49 45	3385	63 27 11	3389
	α Arietis E.	110 42 57	3201	109 16 49	3196	107 50 35	3191	106 24 15	3185
16	Spica W.	93 54 10	3046	95 23 26	3042	96 52 47	3038	98 22 13	3033
	Saturn W.	68 12 39	3030	69 42 15	3026	71 11 56	3021	72 41 43	3017
	Antares W.	48 32 46	3137	50 0 11	3128	51 27 47	3119	52 55 33	3111
	Jupiter E.	41 24 58	3012	39 55 0	3008	38 24 58	3004	36 54 50	3000
	Fomalhaut E.	43 25 26	3833	42 10 58	3877	40 57 15	3926	39 44 22	3980
	α Pegasi E.	56 36 10	3430	55 14 27	3440	53 52 56	3452	52 31 38	3466
	α Arietis E.	99 11 0	3160	97 44 3	3155	96 17 0	3150	94 49 51	3146
17	Spica W.	105 50 46	3010	107 20 46	3005	108 50 52	3001	110 21 4	2996
	Saturn W.	80 12 1	2993	81 42 23	2988	83 12 51	2982	84 43 26	2977
	Antares W.	60 16 48	3073	61 45 31	3065	63 14 23	3057	64 43 25	3051
	Jupiter E.	29 22 56	2980	27 52 18	2975	26 21 34	2971	24 50 46	2967
	Fomalhaut E.	33 55 46	4378	32 50 5	4493	31 46 7	4625	30 44 4	4776
	α Pegasi E.	45 49 34	3560	44 30 16	3587	43 11 27	3616	41 53 10	3649
	α Arietis E.	87 32 39	3121	86 4 55	3116	84 37 5	3112	83 9 10	3107
18	Saturn W.	92 18 5	2947	93 49 24	2941	95 20 51	2935	96 52 26	2927
	Antares W.	72 10 48	3014	73 40 44	3005	75 10 50	2998	76 41 5	2991
	α Pegasi E.	35 32 15	3895	34 18 50	3964	33 6 35	4046	31 55 41	4140
	α Arietis E.	75 48 8	3084	74 19 39	3080	72 51 5	3076	71 22 26	3072
19	Saturn W.	104 32 33	2892	106 5 2	2884	107 37 41	2876	109 10 30	2869
	Antares W.	84 14 43	2962	85 45 56	2943	87 17 20	2935	88 48 54	2927
	α Aquilæ W.	41 33 52	4051	42 44 41	3977	43 56 43	3909	45 9 54	3846
	α Arietis E.	63 57 59	3053	62 28 52	3050	60 59 41	3047	59 30 26	3044
	Aldebaran E.	95 58 7	2889	94 25 34	2882	92 52 52	2873	91 19 59	2866

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
20	Antares	W.	90° 20′ 38″	2919	91° 52′ 33″	2911	93° 24′ 38″	2902	94° 56′ 54″	2893
	a Aquilæ	W.	46 24 9	3788	47 39 24	3734	48 55 35	3684	50 12 39	3637
	a Arietis	E.	58 1 8	3042	56 31 47	3040	55 2 24	3039	53 33 0	3039
	Aldebaran	E	89 46 56	2857	88 13 42	2848	86 40 17	2840	85 6 41	2831
	Sun	E.	139 1 44	3227	137 36 7	3217	136 10 18	3206	134 44 16	3196
21	Antares	W.	102 41 6	2848	104 14 31	2838	105 48 9	2830	107 21 58	2820
	a Aquilæ	W.	56 49 36	3444	58 11 3	3410	59 33 8	3379	60 55 48	3350
	a Arietis	E.	46 6 4	3047	44 36 49	3052	43 7 40	3058	41 38 39	3067
	Aldebaran	E.	77 15 39	2782	75 40 48	2772	74 5 44	2762	72 30 26	2752
	Sun	E.	127 30 49	3139	126 3 27	3128	124 35 51	3115	123 8 0	3104
22	a Aquilæ	W.	67 57 10	3220	69 22 55	3198	70 49 7	3175	72 15 46	3154
	Fomalhaut	W.	36 16 39	3791	37 31 51	3700	38 48 38	3619	40 6 52	3545
	Jupiter	W.	26 52 46	2681	28 29 52	2668	30 7 15	2655	31 44 56	2641
	Aldebaran	E.	64 30 22	2695	62 53 36	2683	61 16 33	2671	59 39 14	2659
	Sun	E.	115 45 2	3041	114 15 40	3027	112 46 1	3014	111 16 5	3001
23	a Aquilæ	W.	79 35 10	3057	81 4 12	3039	82 33 36	3022	84 3 21	3006
	Fomalhaut	W.	46 56 31	3253	48 21 37	3206	49 47 39	3163	51 14 33	3121
	Jupiter	W.	39 57 53	2574	41 37 24	2560	43 17 14	2546	44 57 23	2532
	a Pegasi	W.	32 51 9	3635	34 9 6	3536	35 28 50	3447	36 50 13	3368
	Aldebaran	E.	51 28 27	2594	49 49 24	2582	48 10 4	2568	46 30 25	2553
	Sun	E.	103 42 10	2930	102 10 29	2916	100 38 30	2901	99 6 12	2886
24	a Aquilæ	W.	91 37 1	2932	93 8 39	2919	94 40 34	2906	96 12 45	2896
	Fomalhaut	W.	58 40 39	2949	60 11 56	2918	61 43 52	2889	63 16 25	2862
	Jupiter	W.	53 23 4	2460	55 5 13	2446	56 47 42	2431	58 30 32	2417
	a Pegasi	W.	43 57 34	3064	45 26 28	3016	46 56 21	2972	48 27 9	2930
	Aldebaran	E.	38 7 19	2483	36 25 42	2469	34 43 45	2455	33 1 28	2440
	Sun	E.	91 19 51	2809	89 45 35	2796	88 10 58	2778	86 36 1	2763
25	a Aquilæ	W.	103 57 0	2849	105 30 24	2842	107 3 57	2837	108 37 37	2833
	Fomalhaut	W.	71 7 32	2740	72 43 19	2718	74 19 35	2697	75 56 19	2677
	Jupiter	W.	67 9 59	2342	68 54 57	2328	70 40 16	2313	72 25 57	2298
	a Pegasi	W.	56 13 21	2757	57 48 45	2728	59 24 48	2700	61 1 28	2674
	Sun	E.	78 36 6	2684	76 59 4	2667	75 21 40	2652	73 43 55	2637
26	Fomalhaut	W.	84 6 22	2588	85 45 33	2573	87 25 5	2559	89 4 57	2546
	Jupiter	W.	81 19 39	2227	83 7 26	2213	84 55 34	2200	86 44 2	2186
	a Pegasi	W.	69 13 16	2557	70 53 10	2536	72 33 33	2517	74 14 23	2499
	a Arietis	W.	26 17 51	2965	27 48 47	2878	29 21 41	2792	30 56 29	2722
	Sun	E.	65 30 0	2561	63 50 11	2546	62 10 2	2532	60 29 33	2517
27	Fomalhaut	W.	97 28 35	2490	99 10 2	2483	100 51 39	2476	102 33 26	2470
	Jupiter	W.	95 51 17	2124	97 41 39	2113	99 32 18	2103	101 23 15	2091
	a Pegasi	W.	82 44 33	2419	84 27 40	2408	86 11 4	2395	87 54 46	2383
	a Arietis	W.	39 9 32	2477	40 51 17	2443	42 33 52	2410	44 17 12	2382
	Sun	E.	52 2 23	2453	50 20 4	2441	48 37 28	2431	46 54 37	2419
28	Jupiter	W.	110 41 46	2046	112 34 8	2039	114 26 42	2031	116 19 27	2026
	a Pegasi	W.	96 36 51	2343	98 21 48	2337	100 6 53	2334	101 52 3	2333
	a Arietis	W.	53 3 2	2272	54 49 42	2256	56 36 48	2240	58 24 16	2227
	Sun	E.	38 16 48	2376	36 32 38	2369	34 48 19	2364	33 3 52	2360

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
20	Antares	W.	96° 29′ 22″	2884	98° 2′ 1″	2876	99° 34′ 51″	2866	101° 7′ 53″	2858
	a Aquilæ	W.	51 30 33	3594	52 49 14	3554	54 8 39	3516	55 28 47	3478
	a Arietis	E.	52 3 35	3089	50 34 10	3039	49 4 46	3041	47 35 24	3043
	Aldebaran	E	83 32 53	2821	81 58 53	2812	80 24 41	2803	78 50 17	2792
	Sun	E.	133 18 1	3184	131 51 33	3173	130 24 52	3162	128 57 57	3151
21	Antares	W.	108 56 0	2811	110 30 14	2801	112 4 41	2792	113 39 20	2783
	a Aquilæ	W.	62 19 2	3322	63 42 48	3294	65 7 6	3270	66 31 53	3244
	a Arietis	E.	40 9 49	3078	38 41 12	3091	37 12 52	3108	35 44 52	3127
	Aldebaran	E.	70 54 55	2741	69 19 9	2729	67 43 8	2718	66 6 52	2707
	Sun	E.	121 39 55	3091	120 11 35	3078	118 42 59	3066	117 14 8	3054
22	a Aquilæ	W.	73 42 50	3133	75 10 19	3113	76 38 13	3094	78 6 30	3075
	Fomalhaut	W.	41 26 27	3477	42 47 17	3415	44 9 17	3357	45 32 23	3303
	Jupiter	W.	33 22 55	2628	35 1 12	2615	36 39 47	2601	38 18 41	2588
	Aldebaran	E.	58 1 39	2646	56 23 47	2634	54 45 38	2621	53 7 12	2607
	Sun	E.	109 45 53	2987	108 15 24	2973	106 44 37	2959	105 13 33	2944
23	a Aquilæ	W.	85 33 27	2990	87 3 52	2974	88 34 37	2960	90 5 40	2946
	Fomalhaut	W.	52 42 17	3083	54 10 48	3047	55 40 3	3012	57 10 1	2980
	Jupiter	W.	46 37 52	2518	48 18 40	2504	49 59 48	2489	51 41 16	2475
	a Pegasi	W.	38 13 6	3295	39 37 23	3230	41 2 57	3170	42 29 42	3114
	Aldebaran	E.	44 50 26	2540	43 10 8	2527	41 29 32	2512	39 48 36	2497
	Sun	E.	97 33 35	2871	96 0 39	2855	94 27 23	2840	92 53 47	2825
24	a Aquilæ	W.	97 45 10	2884	99 17 49	2874	100 50 41	2865	102 23 45	2856
	Fomalhaut	W.	64 49 32	2836	66 23 13	2810	67 57 28	2785	69 32 15	2763
	Jupiter	W.	60 13 43	2402	61 57 15	2387	63 41 8	2372	65 25 23	2357
	a Pegasi	W.	49 58 50	2891	51 31 20	2855	53 4 36	2821	54 38 37	2788
	Aldebaran	E.	31 18 50	2426	29 35 51	2411	27 52 32	2396	26 8 52	2381
	Sun	E.	85 0 44	2747	83 25 6	2731	81 49 7	2715	80 12 47	2699
25	a Aquilæ	W.	110 11 22	2830	111 45 11	2829	113 19 1	2829	114 52 51	2831
	Fomalhaut	W.	77 33 30	2657	79 11 7	2640	80 49 8	2622	82 27 33	2604
	Jupiter	W.	74 11 59	2283	75 58 22	2269	77 45 7	2255	79 32 12	2241
	a Pegasi	W.	62 38 43	2648	64 16 33	2624	65 54 56	2600	67 33 51	2578
	Sun	E.	72 5 50	2621	70 27 24	2606	68 48 37	2591	67 9 29	2575
26	Fomalhaut	W.	90 45 7	2533	92 25 35	2520	94 6 20	2510	95 47 20	2499
	Jupiter	W.	88 32 51	2173	90 21 59	2161	92 11 26	2148	94 1 12	2136
	a Pegasi	W.	75 55 38	2481	77 37 18	2465	79 19 21	2449	81 1 46	2433
	a Arietis	W.	32 32 29	2661	34 10 1	2606	35 48 48	2558	37 28 41	2516
	Sun	E.	58 48 44	2504	57 7 36	2491	55 26 10	2477	53 44 25	2465
27	Fomalhaut	W.	104 15 21	2466	105 57 22	2463	107 39 27	2462	109 21 34	2461
	Jupiter	W.	103 14 28	2081	105 5 56	2072	106 57 39	2062	108 49 36	2053
	a Pegasi	W.	89 38 45	2373	91 22 58	2364	93 7 24	2356	94 52 2	2348
	a Arietis	W.	46 1 12	2356	47 45 50	2332	49 31 3	2310	51 16 48	2290
	Sun	E.	45 11 30	2410	43 28 9	2400	41 44 34	2391	40 0 47	2383
28	Jupiter	W.	118 12 24	2019	120 5 28	2014	121 58 40	2010	123 52 0	2006
	a Pegasi	W.	103 37 16	2331	105 22 31	2331	107 7 46	2332	108 52 59	2335
	a Arietis	W.	60 12 4	2214	62 0 10	2203	63 48 33	2194	65 37 10	2185
	Sun	E.	31 19 18	2356	29 34 39	2353	27 49 56	2351	26 5 11	2350

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	8 44 36.00	9.721	N.18 5 30.1	37.61	15 48.00	66.67	6 4.84	0.135
Fri.	2	8 48 28.99	9.695	17 50 18.7	38.34	15 48.13	66.58	6 1.28	0.161
Sat.	3	8 52 21.35	9.670	17 34 49.8	39.06	15 48.26	66.50	5 57.10	0.186
Sun.	4	8 56 13.10	9.644	17 19 3.8	39.77	15 48.40	66.41	5 52.30	0.212
Mon.	5	9 0 4.24	9.619	17 3 1.0	40.46	15 48.55	66.33	5 46.90	0.237
Tues.	6	9 3 54.76	9.593	16 46 41.8	41.14	15 48.70	66.24	5 40.88	0.263
Wed.	7	9 7 44.66	9.567	16 30 6.4	41.81	15 48.85	66.16	5 34.25	0.289
Thur.	8	9 11 33.95	9.543	16 13 15.1	42.47	15 49.01	66.07	5 27.01	0.314
Fri.	9	9 15 22.64	9.518	15 56 8.0	43.12	15 49.17	65.98	5 19.17	0.339
Sat.	10	9 19 10.75	9.493	15 38 45.6	43.75	15 49.33	65.90	5 10.74	0.363
Sun.	11	9 22 58.27	9.468	15 21 8.2	44.37	15 49.50	65.82	5 1.73	0.387
Mon.	12	9 26 45.20	9.444	15 3 16.1	44.97	15 49.67	65.74	4 52.13	0.411
Tues.	13	9 30 31.56	9.421	14 45 9.6	45.57	15 49.84	65.66	4 41.97	0.435
Wed.	14	9 34 17.35	9.398	14 26 49.1	46.15	15 50.02	65.58	4 31.24	0.458
Thur.	15	9 38 2.60	9.376	14 8 14.8	46.72	15 50.20	65.50	4 19.96	0.481
Fri.	16	9 41 47.33	9.354	13 49 26.9	47.28	15 50.38	65.42	4 8.17	0.503
Sat.	17	9 45 31.54	9.333	13 30 25.8	47.82	15 50.56	65.34	3 55.87	0.524
Sun.	18	9 49 15.25	9.313	13 11 11.8	48.35	15 50.74	65.27	3 43.05	0.545
Mon.	19	9 52 58.46	9.293	12 51 45.2	48.87	15 50.93	65.19	3 29.74	0.565
Tues.	20	9 56 41.19	9.273	12 32 6.3	49.38	15 51.12	65.12	3 15.96	0.584
Wed.	21	10 0 23.46	9.254	12 12 15.4	49.87	15 51.31	65.05	3 1.71	0.603
Thur.	22	10 4 5.28	9.235	11 52 12.8	50.35	15 51.50	64.98	2 47.02	0.621
Fri.	23	10 7 46.67	9.217	11 31 58.8	50.82	15 51.70	64.91	2 31.90	0.639
Sat.	24	10 11 27.64	9.199	11 11 33.8	51.27	15 51.90	64.85	2 16.36	0.656
Sun.	25	10 15 8.20	9.182	10 50 58.2	51.71	15 52.10	64.79	2 0.41	0.673
Mon.	26	10 18 48.36	9.166	10 30 12.1	52.14	15 52.31	64.73	1 44.06	0.689
Tues.	27	10 22 28.13	9.150	10 9 16.0	52.55	15 52.52	64.67	1 27.33	0.705
Wed.	28	10 26 7.54	9.135	9 48 10.2	52.95	15 52.74	64.62	1 10.24	0.720
Thur.	29	10 29 46.60	9.121	9 26 55.0	53.34	15 52.96	64.57	0 52.79	0.735
Fri.	30	10 33 25.31	9.107	9 5 30.7	53.71	15 53.19	64.52	0 34.99	0.749
Sat.	31	10 37 3.68	9.093	8 43 57.6	54.07	15 53.42	64.47	0 16.85	0.763
Sun.	32	10 40 41.72	9.080	N. 8 22 16.2	54.41	15 53.65	64.43	0 1.61	0.776

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from* *added to* *Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	8 44 35.01	9.721	N.18 5 33.8	37.61	6 4.85	0.136	8 38 30.16
Fri.	2	8 48 28.01	9.695	17 50 22.5	38.34	6 1.29	0.161	8 42 26.72
Sat.	3	8 52 20.39	9.670	17 34 53.7	39.06	5 57.12	0.186	8 46 23.27
Sun.	4	8 56 12.15	9.644	17 19 7.7	30.77	5 52.32	0.212	8 50 19.83
Mon.	5	9 0 3.31	9.619	17 3 4.9	40.46	5 46.92	0.237	8 54 16.39
Tues.	6	9 3 53.85	9.593	16 46 45.7	41.14	5 40.91	0.263	8 58 12.94
Wed.	7	9 7 43.77	9.567	16 30 10.3	41.81	5 34.28	0.289	9 2 9.49
Thur.	8	9 11 33.08	9.543	16 13 18.9	42.47	5 27.03	0.314	9 6 6.05
Fri.	9	9 15 21.80	9.518	15 56 11.8	43.12	5 19.20	0.339	9 10 2.60
Sat.	10	9 19 9.93	9.493	15 38 49.4	43.75	5 10.77	0.363	9 13 59.16
Sun.	11	9 22 57.47	9.468	15 21 11.9	44.37	5 1.76	0.387	9 17 55.71
Mon.	12	9 26 44.43	9.444	15 3 19.7	44.97	4 52.16	0.411	9 21 52.27
Tues.	13	9 30 30.82	9.421	14 45 13.2	45.57	4 42.00	0.436	9 25 48.82
Wed.	14	9 34 16.64	9.398	14 26 52.7	46.15	4 31.27	0.458	9 29 45.37
Thur.	15	9 38 1.92	9.376	14 8 18.2	46.72	4 19.99	0.481	9 33 41.93
Fri.	16	9 41 46.68	9.354	13 49 30.2	47.28	4 8.20	0.503	9 37 38.48
Sat.	17	9 45 30.93	9.333	13 30 29.0	47.82	3 35.90	0.524	9 41 35.03
Sun.	18	9 49 14.67	9.313	13 11 14.8	48.35	3 43.08	0.545	9 45 31.59
Mon.	19	9 52 57.91	9.293	12 51 48.0	48.87	3 29.77	0.565	9 49 28.14
Tues.	20	9 56 40.68	9.273	12 32 9.0	49.38	3 15.99	0.584	9 53 24.69
Wed.	21	10 0 22.99	9.254	12 12 17.9	49.87	3 1.74	0.603	9 57 21.25
Thur.	22	10 4 4.85	9.235	11 52 15.1	50.35	2 47.05	0.621	10 1 17.80
Fri.	23	10 7 46.28	9.217	11 32 1.0	50.82	2 31.93	0.639	10 5 14.35
Sat.	24	10 11 27.29	9.199	11 11 35.8	51.27	2 16.38	0.656	10 9 10.91
Sun.	25	10 15 7.89	9.182	10 50 59.9	51.71	2 0.43	0.673	10 13 7.46
Mon.	26	10 18 48.09	9.166	10 30 13.6	52.14	1 44.08	0.689	10 17 4.01
Tues.	27	10 22 27.91	9.150	10 9 17.3	52.55	1 27.34	0.705	10 21 0.57
Wed.	28	10 26 7.37	9.135	9 48 11.2	52.95	1 10.25	0.720	10 24 57.12
Thur.	29	10 29 46.47	9.121	9 26 55.7	53.34	0 52.80	0.735	10 28 53.67
Fri.	30	10 33 25.22	9.107	9 5 31.2	53.71	0 35.00	0.749	10 32 50.22
Sat.	31	10 37 3.63	9.093	8 43 57.9	54.07	0 16.85	0.763	10 36 46.78
Sun.	32	10 40 41.72	9.080	N. 8 22 16.2	54.41	0 1.61	0.776	10 40 43.33

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	213	128 43 13.2	42 47.0	143.62	—0.11	0.0063709	24.4	15 18 58.87
2	214	129 40 40.4	40 14.0	143.65	+0.01	.0063111	25.4	15 15 2.96
3	215	130 38 8.4	37 41.8	143.69	0.14	.0062489	26.4	15 11 7.05
4	216	131 35 37.2	35 10.5	143.72	0.27	.0061844	27.3	15 7 11.13
5	217	132 33 6.8	32 40.0	143.76	0.40	.0061178	28.2	15 3 15.22
6	218	133 30 37.3	30 10.4	143.79	0.51	.0060492	29.0	14 59 19.31
7	219	134 28 8.5	27 41.5	143.82	0.60	.0059786	29.7	14 55 23.41
8	220	135 25 40.5	25 13.3	143.85	0.66	.0059062	30.4	14 51 27.51
9	221	136 23 13.3	22 46.0	143.89	0.68	.0058322	31.1	14 47 31.60
10	222	137 20 47.0	20 19.6	143.93	0.67	.0057567	31.7	14 43 35.69
11	223	138 18 21.7	17 54.2	143.97	0.63	.0056799	32.2	14 39 39.78
12	224	139 15 57.4	15 29.8	144.01	0.57	.0056020	32.7	14 35 43.88
13	225	140 13 34.1	13 6.3	144.05	0.48	.0055229	33.2	14 31 47.97
14	226	141 11 12.0	10 44.1	144.10	0.38	.0054427	33.6	14 27 52.06
15	227	142 8 51.1	8 23.1	144.15	0.25	.0053615	34.0	14 23 56.15
16	228	143 6 31.6	6 3.5	144.21	+0.11	.0052793	34.4	14 20 0.24
17	229	144 4 13.4	3 45.2	144.27	—0.03	.0051961	34.8	14 16 4.33
18	230	145 1 56.6	1 28.3	144.33	0.17	.0051120	35.2	14 12 8.43
19	231	145 59 41.4	59 13.0	144.40	0.30	.0050268	35.7	14 8 12.52
20	232	146 57 27.9	56 59.4	144.47	0.40	.0049406	36.2	14 4 16.62
21	233	147 55 16.1	44 47.5	144.54	0.48	.0048532	36.7	14 0 20.71
22	234	148 53 6.0	52 37.3	144.62	0.54	.0047645	37.2	13 56 24.80
23	235	149 50 57.6	50 28.8	144.69	0.57	.0046744	37.8	13 52 28.89
24	236	150 48 51.0	48 22.1	144.76	0.56	.0045828	38.5	13 48 32.99
25	237	151 46 46.2	46 17.2	144.84	0.52	.0044895	39.1	13 44 37.08
26	238	152 44 43.2	44 14.1	144.91	0.45	.0043947	39.8	13 40 41.17
27	239	153 42 42.0	42 12.8	144.99	0.36	.0042982	40.5	13 36 45.26
28	240	154 40 42.4	40 13.1	145.06	0.26	.0041998	41.3	13 32 49.35
29	241	155 38 44.6	38 15.2	145.13	0.14	.0040994	42.1	13 28 53.44
30	242	156 36 48.4	36 18.9	145.19	—0.01	.0039971	42.9	13 24 57.54
31	243	157 34 53.8	34 24.2	145.25	+0.12	.0038930	43.6	13 21 1.64
32	244	158 33 0.8	32 31.1	145.31	+0.25	0.0037878	44.3	13 17 5.73

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 23.9	16 17.9	60 4.6	−1.70	59 42.6	−1.93	1 18.0	2.32	1.3
2	16 11.3	16 4.2	59 18.2	2.11	58 52.0	2.23	2 12.0	2.19	2.3
3	15 56.7	15 49.1	58 24.6	2.30	57 56.7	2.32	3 3.1	2.08	3.3
4	15 41.5	15 34.1	57 28.9	2.29	57 1.7	2.22	3 52.0	2.00	4.3
5	15 27.0	15 20.3	56 35.6	2.11	56 10.9	1.98	4 39.3	1.95	5.3
6	15 14.1	15 8.4	55 48.1	1.82	55 27.3	1.64	5 25.8	1.93	6.3
7	15 3.3	14 58.9	55 8.7	1.45	54 52.4	1.25	6 11.9	1.93	7.3
8	14 55.1	14 52.0	54 38.5	1.05	54 27.1	0.85	6 58.2	1.94	8.3
9	14 49.6	14 47.8	54 18.1	0.65	54 11.5	0.45	7 45.0	1.95	9.3
10	14 46.6	14 46.1	54 7.2	−0.27	54 5.1	−0.09	8 32.1	1.97	10.3
11	14 46.1	14 46.6	54 5.1	+0.08	54 7.1	+0.24	9 19.5	1.98	11.3
12	14 47.6	14 49.1	54 10.9	0.38	54 16.3	0.51	10 7.0	1.97	12.3
13	14 51.0	14 53.2	54 23.2	0.63	54 31.4	0.73	10 54.3	1.96	13.3
14	14 55.8	14 58.6	54 40.8	0.82	54 51.2	0.90	11 41.2	1.94	14.3
15	15 1.7	15 5.0	55 2.5	0.98	55 14.6	1.04	12 27.6	1.92	15.3
16	15 8.5	15 12.1	55 27.4	1.09	55 40.9	1.14	13 13.6	1.92	16.3
17	15 15.9	15 19.9	55 54.9	1.19	56 9.4	1.23	13 59.7	1.93	17.3
18	15 24.0	15 28.2	56 24.4	1.27	56 39.9	1.30	14 46.3	1.96	18.3
19	15 32.5	15 36.9	56 55.7	1.33	57 11.8	1.36	15 33.9	2.02	19.3
20	15 41.4	15 46.0	57 28.3	1.38	57 45.1	1.40	16 23.3	2.10	20.3
21	15 50.6	15 55.2	58 2.0	1.41	58 19.0	1.41	17 15.0	2.21	21.3
22	15 59.8	16 4.2	58 35.8	1.39	58 52.3	1.35	18 9.3	2.32	22.3
23	16 8.6	16 12.6	59 8.1	1.29	59 23.1	1.20	19 6.3	2.42	23.3
24	16 16.4	16 19.5	59 36.9	1.09	59 49.2	0.94	20 5.3	2.48	24.3
25	16 22.5	16 24.7	59 59.4	0.75	60 7.2	0.54	21 5.1	2.49	25.3
26	16 26.0	16 26.6	60 12.3	+0.30	60 14.5	+0.04	22 4.3	2.44	26.3
27	16 26.3	16 25.1	60 13.3	−0.24	60 8.8	−0.52	23 2.0	2.35	27.3
28	16 22.9	16 19.9	60 0.9	0.80	59 49.6	1.07	23 57.2	2.25	28.3
29	16 15.9	16 11.2	59 35.2	1.32	59 17.8	1.55	δ		29.3
30	16 5.8	15 59.9	58 58.0	1.74	58 36.2	1.89	0 50.1	2.15	1.0
31	15 53.5	15 46.8	58 12.8	1.99	57 48.4	2.05	1 40.7	2.07	2.0
32	15 40.1	15 33.3	57 23.5	−2.07	56 58.7	−2.04	2 29.7	2.01	3.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 53 36.20	2.4006	N. 11 6 13.7	9.394
1	9 56 0.09	2.3957	10 56 48.2	9.456
2	9 58 23.68	2.3908	10 47 19.1	9.515
3	10 0 46.97	2.3858	10 37 46.4	9.573
4	10 3 9.97	2.3809	10 28 10.3	9.630
5	10 5 32.67	2.3759	10 18 30.8	9.685
6	10 7 55.08	2.3710	10 8 48.1	9.739
7	10 10 17.19	2.3660	9 59 2.1	9.792
8	10 12 39.00	2.3611	9 49 13.1	9.843
9	10 15 0.52	2.3563	9 39 21.1	9.892
10	10 17 21.75	2.3514	9 29 26.1	9.940
11	10 19 42.68	2.3464	9 19 28.2	9.987
12	10 22 3.32	2.3416	9 9 27.6	10.033
13	10 24 23.67	2.3368	8 59 24.3	10.077
14	10 26 43.73	2.3319	8 49 18.4	10.120
15	10 29 3.50	2.3271	8 39 10.0	10.161
16	10 31 22.98	2.3223	8 28 59.1	10.201
17	10 33 42.17	2.3175	8 18 45.9	10.239
18	10 36 1.08	2.3127	8 8 30.4	10.277
19	10 38 19.70	2.3080	7 58 12.7	10.313
20	10 40 38.04	2.3033	7 47 52.9	10.347
21	10 42 56.10	2.2986	7 37 31.1	10.380
22	10 45 13.87	2.2939	7 27 7.3	10.411
23	10 47 31.36	2.2893	N. 7 16 41.6	10.442

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 49 48.58	2.2847	N. 7 6 14.2	10.471
1	10 52 5.53	2.2801	6 55 45.1	10.499
2	10 54 22.20	2.2756	6 45 14.3	10.526
3	10 56 38.60	2.2710	6 34 41.9	10.552
4	10 58 54.72	2.2665	6 24 8.1	10.576
5	11 1 10.57	2.2620	6 13 32.9	10.598
6	11 3 26.16	2.2576	6 2 56.3	10.619
7	11 5 41.48	2.2532	5 52 18.5	10.640
8	11 7 56.54	2.2489	5 41 39.5	10.659
9	11 10 11.34	2.2446	5 30 59.4	10.677
10	11 12 25.89	2.2403	5 20 18.3	10.693
11	11 14 40.18	2.2360	5 9 36.2	10.708
12	11 16 54.21	2.2319	4 58 53.3	10.722
13	11 19 7.99	2.2278	4 48 9.5	10.736
14	11 21 21.52	2.2236	4 37 25.0	10.748
15	11 23 34.81	2.2194	4 26 39.8	10.758
16	11 25 47.85	2.2153	4 15 54.0	10.768
17	11 28 0.65	2.2113	4 5 7.6	10.777
18	11 30 13.21	2.2073	3 54 20.8	10.784
19	11 32 25.53	2.2033	3 43 33.6	10.790
20	11 34 37.61	2.1994	3 32 46.0	10.795
21	11 36 49.46	2.1956	3 21 58.2	10.799
22	11 39 1.08	2.1917	3 11 10.1	10.802
23	11 41 12.47	2.1879	3 0 21.9	10.804
24	11 43 23.63	2.1842	N. 2 49 33.6	10.804

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 43 23.63	2.1842	N. 2 49 33.6	10.804
1	11 45 34.57	2.1806	2 38 45.3	10.804
2	11 47 45.29	2.1769	2 27 57.1	10.803
3	11 49 55.79	2.1733	2 17 9.0	10.800
4	11 52 6.08	2.1697	2 6 21.1	10.796
5	11 54 16.16	2.1662	1 55 33.4	10.792
6	11 56 26.02	2.1627	1 44 46.1	10.786
7	11 58 35.68	2.1593	1 33 59.1	10.779
8	12 0 45.13	2.1559	1 23 12.6	10.771
9	12 2 54.38	2.1525	1 12 26.5	10.763
10	12 5 3.43	2.1492	1 1 41.0	10.754
11	12 7 12.29	2.1460	0 50 56.1	10.743
12	12 9 20.95	2.1428	0 40 11.8	10.732
13	12 11 29.42	2.1397	0 29 28.2	10.720
14	12 13 37.71	2.1365	0 18 45.4	10.707
15	12 15 45.81	2.1334	N. 0 8 3.4	10.693
16	12 17 53.72	2.1304	S. 0 2 37.7	10.678
17	12 20 1.46	2.1275	0 13 17.9	10.663
18	12 22 9.02	2.1246	0 23 57.2	10.646
19	12 24 16.41	2.1217	0 34 35.4	10.627
20	12 26 23.62	2.1189	0 45 12.5	10.608
21	12 28 30.67	2.1161	0 55 48.5	10.589
22	12 30 37.55	2.1133	1 6 23.3	10.569
23	12 32 44.27	2.1106	S. 1 16 56.8	10.548

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 34 50.82	2.1079	S. 1 27 29.1	10.526
1	12 36 57.22	2.1053	1 38 0.0	10.504
2	12 39 3.46	2.1028	1 48 29.6	10.481
3	12 41 9.55	2.1003	1 58 57.7	10.456
4	12 43 15.50	2.0978	2 9 24.3	10.431
5	12 45 21.30	2.0954	2 19 49.4	10.405
6	12 47 26.95	2.0931	2 30 12.9	10.378
7	12 49 32.46	2.0908	2 40 34.8	10.351
8	12 51 37.84	2.0886	2 50 55.0	10.323
9	12 53 43.08	2.0863	3 1 13.5	10.294
10	12 55 48.19	2.0840	3 11 30.3	10.264
11	12 57 53.16	2.0818	3 21 45.3	10.234
12	12 59 58.01	2.0798	3 31 58.4	10.203
13	13 2 2.74	2.0778	3 42 9.6	10.171
14	13 4 7.34	2.0758	3 52 18.9	10.138
15	13 6 11.82	2.0738	4 2 26.2	10.105
16	13 8 16.19	2.0719	4 12 31.5	10.071
17	13 10 20.45	2.0700	4 22 34.8	10.037
18	13 12 24.59	2.0682	4 32 36.0	10.002
19	13 14 28.63	2.0664	4 42 35.0	9.966
20	13 16 32.56	2.0647	4 52 31.9	9.930
21	13 18 36.39	2.0630	5 2 26.6	9.893
22	13 20 40.12	2.0614	5 12 19.0	9.855
23	13 22 43.75	2.0598	5 22 9.1	9.816
24	13 24 47.29	2.0582	S. 5 31 56.9	9.777

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					**WEDNESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 24 47.29	2.0582	S. 5 31 56.9	9.777	0	15 2 31.66	2.0277	S. 12 25 45.0	7.279
1	13 26 50.73	2.0567	5 41 42.4	9.737	1	15 4 33.33	2.0278	12 32 59.8	7.216
2	13 28 54.09	2.0552	5 51 25.4	9.697	2	15 6 35.00	2.0280	12 40 10.8	7.151
3	13 30 57.36	2.0538	6 1 6.0	9.656	3	15 8 36.68	2.0282	12 47 18.0	7.087
4	13 33 0.55	2.0524	6 10 44.1	9.615	4	15 10 38.38	2.0284	12 54 21.3	7.023
5	13 35 3.66	2.0511	6 20 19.7	9.573	5	15 12 40.09	2.0287	13 1 20.7	6.958
6	13 37 6.68	2.0498	6 29 52.8	9.530	6	15 14 41.82	2.0289	13 8 16.3	6.893
7	13 39 9.63	2.0485	6 39 23.3	9.486	7	15 16 43.56	2.0292	13 15 8.0	6.828
8	13 41 12.50	2.0473	6 48 51.1	9.442	8	15 18 45.32	2.0295	13 21 55.7	6.763
9	13 43 15.30	2.0461	6 58 16.3	9.398	9	15 20 47.09	2.0298	13 28 39.5	6.697
10	13 45 18.03	2.0449	7 7 38.8	9.353	10	15 22 48.89	2.0301	13 35 19.3	6.630
11	13 47 20.69	2.0438	7 16 58.6	9.307	11	15 24 50.71	2.0305	13 41 55.1	6.563
12	13 49 23.28	2.0427	7 26 15.7	9.261	12	15 26 52.55	2.0309	13 48 26.9	6.496
13	13 51 25.81	2.0417	7 35 30.0	9.214	13	15 28 54.41	2.0313	13 54 54.7	6.429
14	13 53 28.28	2.0407	7 44 41.4	9.167	14	15 30 56.30	2.0317	14 1 18.4	6.361
15	13 55 30.69	2.0397	7 53 50.0	9.120	15	15 32 58.21	2.0321	14 7 38.0	6.293
16	13 57 33.04	2.0388	8 2 55.8	9.072	16	15 35 0.15	2.0325	14 13 53.5	6.225
17	13 59 35.34	2.0379	8 11 58.6	9.023	17	15 37 2.12	2.0330	14 20 4.9	6.156
18	14 1 37.59	2.0371	8 20 58.5	8.974	18	15 39 4.11	2.0335	14 26 12.2	6.087
19	14 3 39.79	2.0363	8 29 55.4	8.924	19	15 41 6.13	2.0340	14 32 15.3	6.017
20	14 5 41.94	2.0355	8 38 49.4	8.874	20	15 43 8.19	2.0345	14 38 14.2	5.947
21	14 7 44.05	2.0348	8 47 40.3	8.823	21	15 45 10.27	2.0350	14 44 9.0	5.877
22	14 9 46.11	2.0341	8 56 28.1	8.771	22	15 47 12.39	2.0356	14 49 59.5	5.807
23	14 11 48.13	2.0334	S. 9 5 12.8	8.719	23	15 49 14.54	2.0362	S. 14 55 45.8	5.736
	TUESDAY 6.					**THURSDAY 8.**			
0	14 13 50.12	2.0328	S. 9 13 54.4	8.667	0	15 51 16.73	2.0367	S. 15 1 27.8	5.665
1	14 15 52.07	2.0323	9 22 32.8	8.614	1	15 53 18.95	2.0373	15 7 5.5	5.593
2	14 17 53.99	2.0318	9 31 8.1	8.561	2	15 55 21.20	2.0378	15 12 38.9	5.521
3	14 19 55.88	2.0313	9 39 40.2	8.508	3	15 57 23.49	2.0384	15 18 8.0	5.448
4	14 21 57.74	2.0308	9 48 9.0	8.454	4	15 59 25.81	2.0390	15 23 32.7	5.376
5	14 23 59.57	2.0303	9 56 34.6	8.399	5	16 1 28.17	2.0396	15 28 53.1	5.303
6	14 26 1.38	2.0299	10 4 56.9	8.344	6	16 3 30.56	2.0402	15 34 9.1	5.230
7	14 28 3.17	2.0296	10 13 15.9	8.288	7	16 5 33.00	2.0409	15 39 20.8	5.157
8	14 30 4.93	2.0292	10 21 31.5	8.232	8	16 7 35.47	2.0415	15 44 28.0	5.083
9	14 32 6.67	2.0289	10 29 43.8	8.176	9	16 9 37.98	2.0422	15 49 30.8	5.009
10	14 34 8.40	2.0286	10 37 52.6	8.119	10	16 11 40.53	2.0429	15 54 29.1	4.935
11	14 36 10.11	2.0283	10 45 58.0	8.062	11	16 13 43.12	2.0436	15 59 23.0	4.861
12	14 38 11.80	2.0281	10 54 0.0	8.004	12	16 15 45.76	2.0442	16 4 12.4	4.786
13	14 40 13.48	2.0279	11 1 58.5	7.946	13	16 17 48.43	2.0449	16 8 57.3	4.711
14	14 42 15.15	2.0278	11 9 53.5	7.887	14	16 19 51.15	2.0456	16 13 37.7	4.636
15	14 44 16.81	2.0277	11 17 44.9	7.827	15	16 21 53.91	2.0463	16 18 13.6	4.560
16	14 46 18.47	2.0275	11 25 32.8	7.768	16	16 23 56.71	2.0470	16 22 44.9	4.484
17	14 48 20.12	2.0274	11 33 17.1	7.708	17	16 25 59.55	2.0477	16 27 11.7	4.408
18	14 50 21.76	2.0274	11 40 57.8	7.648	18	16 28 2.43	2.0485	16 31 33.9	4.332
19	14 52 23.40	2.0274	11 48 34.9	7.587	19	16 30 5.36	2.0493	16 35 51.5	4.255
20	14 54 25.05	2.0275	11 56 8.3	7.526	20	16 32 8.33	2.0500	16 40 4.5	4.178
21	14 56 26.70	2.0275	12 3 38.1	7.465	21	16 34 11.34	2.0506	16 44 12.9	4.101
22	14 58 28.35	2.0276	12 11 4.1	7.403	22	16 36 14.40	2.0513	16 48 16.6	4.024
23	15 0 30.00	2.0276	12 18 26.4	7.341	23	16 38 17.50	2.0520	16 52 15.7	3.946
24	15 2 31.66	2.0277	S. 12 25 45.0	7.278	24	16 40 20.64	2.0527	S. 16 56 10.1	3.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 40 20.64	2.0527	S. 16 56 10.1	3.868
1	16 42 23.83	2.0535	16 59 59.9	3.790
2	16 44 27.06	2.0542	17 3 44.9	3.712
3	16 46 30.33	2.0549	17 7 25.2	3.633
4	16 48 33.65	2.0556	17 11 0.8	3.554
5	16 50 37.01	2.0563	17 14 31.6	3.475
6	16 52 40.41	2.0570	17 17 57.7	3.396
7	16 54 43.85	2.0578	17 21 19.0	3.316
8	16 56 47.34	2.0585	17 24 35.6	3.236
9	16 58 50.87	2.0592	17 27 47.3	3.156
10	17 0 54.44	2.0599	17 30 54.3	3.076
11	17 2 58.05	2.0606	17 33 56.5	2.996
12	17 5 1.71	2.0613	17 36 53.8	2.915
13	17 7 5.40	2.0619	17 39 46.3	2.834
14	17 9 9.14	2.0626	17 42 33.9	2.753
15	17 11 12.92	2.0633	17 45 16.6	2.672
16	17 13 16.74	2.0640	17 47 54.5	2.591
17	17 15 20.60	2.0647	17 50 27.5	2.509
18	17 17 24.50	2.0653	17 52 55.6	2.428
19	17 19 28.44	2.0659	17 55 18.8	2.346
20	17 21 32.41	2.0666	17 57 37.1	2.264
21	17 23 36.42	2.0672	17 59 50.4	2.182
22	17 25 40.47	2.0678	18 1 58.8	2.100
23	17 27 44.56	2.0684	S. 18 4 2.3	2.017

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 29 48.68	2.0690	S. 18 6 0.8	1.934
1	17 31 52.84	2.0696	18 7 54.3	1.851
2	17 33 57.03	2.0702	18 9 42.9	1.768
3	17 36 1.26	2.0708	18 11 26.5	1.685
4	17 38 5.52	2.0713	18 13 5.1	1.602
5	17 40 9.81	2.0718	18 14 38.7	1.518
6	17 42 14.14	2.0723	18 16 7.3	1.435
7	17 44 18.49	2.0728	18 17 30.9	1.351
8	17 46 22.88	2.0733	18 18 49.4	1.267
9	17 48 27.30	2.0738	18 20 2.9	1.183
10	17 50 31.74	2.0743	18 21 11.4	1.099
11	17 52 36.21	2.0748	18 22 14.8	1.015
12	17 54 40.71	2.0753	18 23 13.2	0.931
13	17 56 45.24	2.0757	18 24 6.5	0.847
14	17 58 49.79	2.0761	18 24 54.8	0.763
15	18 0 54.36	2.0764	18 25 38.0	0.678
16	18 2 58.96	2.0768	18 26 16.2	0.593
17	18 5 3.58	2.0772	18 26 49.2	0.508
18	18 7 8.22	2.0776	18 27 17.2	0.423
19	18 9 12.88	2.0779	18 27 40.1	0.339
20	18 11 17.57	2.0783	18 27 58.0	0.254
21	18 13 22.28	2.0786	18 28 10.7	0.170
22	18 15 27.00	2.0789	18 28 18.4	0.085
23	18 17 31.74	2.0791	18 28 21.0	0.001
24	18 19 36.49	2.0794	S. 18 28 18.5	0.084

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 19 36.49	2.0794	S. 18 28 18.5	0.084
1	18 21 41.26	2.0796	18 28 10.9	0.169
2	18 23 46.04	2.0798	18 27 58.2	0.254
3	18 25 50.83	2.0800	18 27 40.4	0.339
4	18 27 55.64	2.0802	18 27 17.5	0.424
5	18 30 0.46	2.0804	18 26 49.5	0.509
6	18 32 5.29	2.0806	18 26 16.4	0.594
7	18 34 10.13	2.0807	18 25 38.2	0.679
8	18 36 14.97	2.0808	18 24 55.0	0.764
9	18 38 19.82	2.0809	18 24 6.6	0.849
10	18 40 24.68	2.0810	18 23 13.1	0.934
11	18 42 29.54	2.0811	18 22 14.5	1.018
12	18 44 34.41	2.0811	18 21 10.9	1.103
13	18 46 39.27	2.0811	18 20 2.1	1.188
14	18 48 44.14	2.0812	18 18 48.3	1.273
15	18 50 49.01	2.0812	18 17 29.4	1.358
16	18 52 53.88	2.0811	18 16 5.4	1.443
17	18 54 58.75	2.0811	18 14 36.3	1.528
18	18 57 3.61	2.0810	18 13 2.1	1.613
19	18 59 8.47	2.0809	18 11 22.9	1.697
20	19 1 13.32	2.0808	18 9 38.6	1.782
21	19 3 18.16	2.0807	18 7 49.2	1.866
22	19 5 23.00	2.0806	18 5 54.8	1.950
23	19 7 27.83	2.0804	S. 18 3 55.4	2.033

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 9 32.65	2.0802	S. 18 1 50.9	2.117
1	19 11 37.46	2.0800	17 59 41.4	2.201
2	19 13 42.25	2.0798	17 57 26.8	2.285
3	19 15 47.03	2.0796	17 55 7.3	2.368
4	19 17 51.80	2.0793	17 52 42.7	2.451
5	19 19 56.55	2.0790	17 50 13.1	2.534
6	19 22 1.28	2.0788	17 47 38.6	2.617
7	19 24 6.00	2.0785	17 44 59.1	2.700
8	19 26 10.70	2.0782	17 42 14.6	2.783
9	19 28 15.38	2.0778	17 39 25.1	2.866
10	19 30 20.04	2.0775	17 36 30.7	2.949
11	19 32 24.68	2.0772	17 33 31.4	3.031
12	19 34 29.30	2.0768	17 30 27.1	3.113
13	19 36 33.90	2.0764	17 27 17.9	3.195
14	19 38 38.47	2.0760	17 24 3.7	3.277
15	19 40 43.01	2.0755	17 20 44.7	3.358
16	19 42 47.53	2.0751	17 17 20.8	3.439
17	19 44 52.02	2.0746	17 13 52.0	3.520
18	19 46 56.48	2.0742	17 10 18.4	3.601
19	19 49 0.91	2.0737	17 6 39.9	3.682
20	19 51 5.32	2.0732	17 2 56.6	3.763
21	19 53 9.70	2.0727	16 59 8.4	3.843
22	19 55 14.04	2.0722	16 55 15.5	3.923
23	19 57 18.35	2.0716	16 51 17.8	4.002
24	19 59 22.63	2.0711	S. 16 47 15.3	4.082

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 59 22.63	2.0711	S. 16 47 15.3	4.082
1	20 1 26.88	2.0705	16 43 8.0	4.161
2	20 3 31.09	2.0699	16 38 56.0	4.240
3	20 5 35.27	2.0693	16 34 39.3	4.318
4	20 7 39.41	2.0687	16 30 17.9	4.396
5	20 9 43.51	2.0681	16 25 51.8	4.471
6	20 11 47.58	2.0674	16 21 21.0	4.552
7	20 13 51.61	2.0668	16 16 45.6	4.628
8	20 15 55.60	2.0661	16 12 5.5	4.706
9	20 17 59.55	2.0655	16 7 20.8	4.783
10	20 20 3.46	2.0648	16 2 31.5	4.860
11	20 22 7.33	2.0642	15 57 37.6	4.936
12	20 24 11.16	2.0635	15 52 39.2	5.012
13	20 26 14.95	2.0628	15 47 36.3	5.087
14	20 28 18.69	2.0621	15 42 28.8	5.162
15	20 30 22.40	2.0614	15 37 16.8	5.237
16	20 32 26.06	2.0607	15 32 0.4	5.311
17	20 34 29.68	2.0599	15 26 39.5	5.385
18	20 36 33.25	2.0592	15 21 14.2	5.459
19	20 38 36.78	2.0585	15 15 44.5	5.533
20	20 40 40.27	2.0578	15 10 10.3	5.606
21	20 42 43.71	2.0570	15 4 31.8	5.678
22	20 44 47.11	2.0563	14 58 48.9	5.750
23	20 46 50.46	2.0555	S. 14 53 1.7	5.822

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 48 53.77	2.0548	S. 14 47 10.3	5.893
1	20 50 57.03	2.0540	14 41 14.6	5.964
2	20 53 0.25	2.0533	14 35 14.6	6.035
3	20 55 3.42	2.0525	14 29 10.4	6.105
4	20 57 6.55	2.0517	14 23 2.0	6.175
5	20 59 9.63	2.0509	14 16 49.3	6.244
6	21 1 12.66	2.0502	14 10 32.5	6.313
7	21 3 15.65	2.0494	14 4 11.7	6.381
8	21 5 18.59	2.0487	13 57 46.8	6.449
9	21 7 21.49	2.0479	13 51 17.8	6.517
10	21 9 24.34	2.0471	13 44 44.8	6.584
11	21 11 27.14	2.0463	13 38 7.8	6.650
12	21 13 29.90	2.0456	13 31 26.9	6.716
13	21 15 32.61	2.0448	13 24 41.9	6.783
14	21 17 35.28	2.0441	13 17 53.0	6.848
15	21 19 37.90	2.0433	13 11 0.2	6.912
16	21 21 40.48	2.0426	13 4 3.6	6.976
17	21 23 43.01	2.0418	12 57 3.1	7.040
18	21 25 45.50	2.0411	12 49 58.8	7.103
19	21 27 47.95	2.0404	12 42 50.7	7.166
20	21 29 50.35	2.0397	12 35 38.8	7.228
21	21 31 52.71	2.0389	12 28 23.2	7.290
22	21 33 55.02	2.0382	12 21 4.0	7.351
23	21 35 57.29	2.0375	12 13 41.1	7.412
24	21 37 59.52	2.0368	S. 12 6 14.5	7.472

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 37 59.52	2.0368	S. 12 6 14.5	7.472
1	21 40 1.71	2.0362	11 58 44.4	7.532
2	21 42 3.86	2.0355	11 51 10.7	7.591
3	21 44 5.97	2.0348	11 43 33.5	7.650
4	21 46 8.03	2.0341	11 35 52.7	7.708
5	21 48 10.06	2.0335	11 28 8.5	7.765
6	21 50 12.05	2.0328	11 20 20.9	7.822
7	21 52 14.00	2.0322	11 12 29.9	7.878
8	21 54 15.91	2.0316	11 4 35.5	7.934
9	21 56 17.79	2.0310	10 56 37.8	7.990
10	21 58 19.63	2.0304	10 48 36.7	8.044
11	22 0 21.44	2.0298	10 40 32.4	8.098
12	22 2 23.21	2.0293	10 32 24.9	8.152
13	22 4 24.95	2.0288	10 24 14.2	8.206
14	22 6 26.66	2.0283	10 16 0.3	8.257
15	22 8 28.34	2.0278	10 7 43.3	8.309
16	22 10 29.99	2.0273	9 59 23.2	8.360
17	22 12 31.61	2.0268	9 51 0.0	8.411
18	22 14 33.20	2.0263	9 42 33.8	8.461
19	22 16 34.76	2.0258	9 34 4.6	8.511
20	22 18 36.30	2.0254	9 25 32.5	8.560
21	22 20 37.82	2.0251	9 16 57.4	8.608
22	22 22 39.31	2.0247	9 8 19.5	8.656
23	22 24 40.78	2.0243	S. 8 59 38.8	8.703

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 26 42.22	2.0239	S. 8 50 55.2	8.749
1	22 28 43.64	2.0236	8 42 8.9	8.795
2	22 30 45.05	2.0233	8 33 19.8	8.840
3	22 32 46.44	2.0230	8 24 28.1	8.884
4	22 34 47.81	2.0227	8 15 33.7	8.928
5	22 36 49.17	2.0225	8 6 36.7	8.971
6	22 38 50.51	2.0223	7 57 37.2	9.013
7	22 40 51.85	2.0222	7 48 35.1	9.055
8	22 42 53.17	2.0220	7 39 30.5	9.096
9	22 44 54.48	2.0218	7 30 23.5	9.137
10	22 46 55.79	2.0217	7 21 14.0	9.177
11	22 48 57.09	2.0216	7 12 2.2	9.211
12	22 50 58.38	2.0215	7 2 48.0	9.256
13	22 52 59.67	2.0215	6 53 31.5	9.298
14	22 55 0.96	2.0214	6 44 12.8	9.331
15	22 57 2.24	2.0214	6 34 51.8	9.368
16	22 59 3.53	2.0215	6 25 28.7	9.403
17	23 1 4.82	2.0216	6 16 3.4	9.436
18	23 3 6.12	2.0217	6 6 36.1	9.473
19	23 5 7.43	2.0218	5 57 6.7	9.508
20	23 7 8.74	2.0220	5 47 35.2	9.541
21	23 9 10.06	2.0222	5 38 1.8	9.573
22	23 11 11.40	2.0224	5 28 26.4	9.605
23	23 13 12.75	2.0226	5 18 49.2	9.636
24	23 15 14.11	2.0229	S. 5 9 10.1	9.666

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 15 14.11	2.0229	S. 5 9 10.1	9.666
1	23 17 15.49	2.0233	4 59 29.2	9.696
2	23 19 16.90	2.0236	4 49 46.6	9.725
3	23 21 18.32	2.0239	4 40 2.2	9.754
4	23 23 19.77	2.0243	4 30 16.1	9.781
5	23 25 21.24	2.0248	4 20 28.4	9.808
6	23 27 22.74	2.0252	4 10 39.1	9.834
7	23 29 24.26	2.0257	4 0 48.3	9.859
8	23 31 25.82	2.0262	3 50 56.0	9.884
9	23 33 27.41	2.0268	3 41 2.2	9.908
10	23 35 29.04	2.0274	3 31 7.0	9.931
11	23 37 30.70	2.0280	3 21 10.5	9.953
12	23 39 32.40	2.0287	3 11 12.6	9.975
13	23 41 34.14	2.0294	3 1 13.4	9.997
14	23 43 35.93	2.0301	2 51 13.0	10.017
15	23 45 37.76	2.0309	2 41 11.4	10.036
16	23 47 39.64	2.0317	2 31 8.7	10.056
17	23 49 41.57	2.0326	2 21 4.8	10.073
18	23 51 43.55	2.0335	2 10 59.9	10.090
19	23 53 45.59	2.0344	2 0 54.0	10.107
20	23 55 47.68	2.0353	1 50 47.1	10.123
21	23 57 49.83	2.0363	1 40 39.3	10.138
22	23 59 52.04	2.0373	1 30 30.6	10.152
23	0 1 54.31	2.0384	S. 1 20 21.0	10.166

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 3 56.65	2.0395	S. 1 10 10.7	10.178
1	0 5 59.05	2.0407	0 59 59.6	10.190
2	0 8 1.53	2.0419	0 49 47.9	10.201
3	0 10 4.08	2.0432	0 39 35.5	10.212
4	0 12 6.71	2.0445	0 29 22.5	10.221
5	0 14 9.42	2.0458	0 19 9.0	10.229
6	0 16 12.20	2.0471	S. 0 8 55.0	10.237
7	0 18 15.06	2.0484	N. 0 1 19.5	10.245
8	0 20 18.01	2.0498	0 11 34.4	10.251
9	0 22 21.05	2.0513	0 21 49.6	10.256
10	0 24 24.17	2.0528	0 32 5.1	10.261
11	0 26 27.38	2.0543	0 42 20.9	10.265
12	0 28 30.69	2.0559	0 52 36.9	10.268
13	0 30 34.10	2.0576	1 2 53.1	10.270
14	0 32 37.60	2.0592	1 13 9.3	10.271
15	0 34 41.20	2.0609	1 23 25.6	10.272
16	0 36 44.91	2.0626	1 33 42.0	10.272
17	0 38 48.72	2.0644	1 43 58.3	10.272
18	0 40 52.64	2.0663	1 54 14.6	10.271
19	0 42 56.67	2.0682	2 4 30.7	10.268
20	0 45 0.82	2.0701	2 14 46.6	10.264
21	0 47 5.08	2.0720	2 25 2.3	10.260
22	0 49 9.46	2.0740	2 35 17.8	10.255
23	0 51 13.96	2.0761	2 45 32.9	10.248
24	0 53 18.59	2.0782	N. 2 55 47.6	10.241

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 53 18.59	2.0782	N. 2 55 47.6	10.241
1	0 55 23.34	2.0803	3 6 1.8	10.233
2	0 57 28.22	2.0824	3 16 15.6	10.224
3	0 59 33.23	2.0846	3 26 28.9	10.216
4	1 1 38.37	2.0869	3 36 41.5	10.206
5	1 3 43.65	2.0892	3 46 53.4	10.196
6	1 5 49.07	2.0915	3 57 4.7	10.181
7	1 7 54.63	2.0938	4 7 15.3	10.169
8	1 10 0.33	2.0962	4 17 25.0	10.156
9	1 12 6.18	2.0987	4 27 33.9	10.140
10	1 14 12.17	2.1012	4 37 41.8	10.124
11	1 16 18.32	2.1038	4 47 48.8	10.108
12	1 18 24.62	2.1063	4 57 54.7	10.091
13	1 20 31.08	2.1089	5 7 59.6	10.072
14	1 22 37.69	2.1116	5 18 3.3	10.053
15	1 24 44.46	2.1143	5 28 5.8	10.033
16	1 26 51.40	2.1170	5 38 7.2	10.013
17	1 28 58.50	2.1198	5 48 7.4	9.990
18	1 31 5.77	2.1226	5 58 6.2	9.967
19	1 33 13.21	2.1255	6 8 3.5	9.943
20	1 35 20.83	2.1284	6 17 59.4	9.918
21	1 37 28.62	2.1313	6 27 53.8	9.893
22	1 39 36.58	2.1343	6 37 46.6	9.867
23	1 41 44.72	2.1373	N. 6 47 37.7	9.839

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 43 53.05	2.1403	N. 6 57 27.1	9.810
1	1 46 1.56	2.1434	7 7 14.8	9.781
2	1 48 10.26	2.1466	7 17 0.8	9.751
3	1 50 19.14	2.1497	7 26 44.9	9.720
4	1 52 28.22	2.1529	7 36 27.2	9.689
5	1 54 37.49	2.1562	7 46 7.5	9.654
6	1 56 46.96	2.1595	7 55 45.7	9.620
7	1 58 56.62	2.1628	8 5 21.9	9.585
8	2 1 6.49	2.1661	8 14 56.0	9.549
9	2 3 16.56	2.1695	8 24 27.9	9.512
10	2 5 26.83	2.1729	8 33 57.5	9.474
11	2 7 37.31	2.1763	8 43 24.8	9.436
12	2 9 47.99	2.1798	8 52 49.7	9.396
13	2 11 58.89	2.1834	9 2 12.2	9.354
14	2 14 10.00	2.1869	9 11 32.2	9.312
15	2 16 21.32	2.1905	9 20 49.7	9.270
16	2 18 32.86	2.1941	9 30 4.6	9.226
17	2 20 44.62	2.1978	9 39 16.8	9.181
18	2 22 56.60	2.2015	9 48 26.3	9.136
19	2 25 8.80	2.2052	9 57 33.0	9.089
20	2 27 21.22	2.2090	10 6 36.9	9.040
21	2 29 33.87	2.2128	10 15 37.9	8.992
22	2 31 46.75	2.2165	10 24 35.9	8.942
23	2 33 59.85	2.2203	10 33 30.9	8.891
24	2 36 13.19	2.2242	N. 10 42 22.8	8.839

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 36 13.19	2.2242	N.10 42 22.8	8.839
1	2 38 26.76	2.2281	10 51 11.5	8.786
2	2 40 40.56	2.2320	10 59 57.1	8.732
3	2 42 54.60	2.2359	11 8 39.4	8.678
4	2 45 8.87	2.2399	11 17 18.4	8.622
5	2 47 23.38	2.2439	11 25 54.0	8.565
6	2 49 38.14	2.2479	11 34 26.2	8.506
7	2 51 53.13	2.2519	11 42 54.8	8.447
8	2 54 8.37	2.2559	11 51 19.9	8.387
9	2 56 23.85	2.2600	11 59 41.3	8.327
10	2 58 39.57	2.2641	12 7 59.1	8.266
11	3 0 55.54	2.2683	12 16 13.1	8.202
12	3 3 11.76	2.2724	12 24 23.3	8.138
13	3 5 28.23	2.2765	12 32 29.6	8.072
14	3 7 44.94	2.2806	12 40 32.0	8.006
15	3 10 1.90	2.2848	12 48 30.4	7.939
16	3 12 19.12	2.2890	12 56 24.7	7.871
17	3 14 36.58	2.2932	13 4 14.9	7.802
18	3 16 54.30	2.2974	13 12 0.9	7.732
19	3 19 12.27	2.3016	13 19 42.7	7.660
20	3 21 30.49	2.3058	13 27 20.1	7.587
21	3 23 48.97	2.3101	13 34 53.2	7.514
22	3 26 7.70	2.3143	13 42 21.8	7.440
23	3 28 26.68	2.3186	N.13 49 46.0	7.365

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 30 45.92	2.3227	N.13 57 5.6	7.290
1	3 33 5.41	2.3270	14 4 20.6	7.211
2	3 35 25.16	2.3313	14 11 30.9	7.132
3	3 37 45.17	2.3356	14 18 36.5	7.053
4	3 40 5.43	2.3398	14 25 37.2	6.973
5	3 42 25.95	2.3441	14 32 33.1	6.891
6	3 44 46.72	2.3483	14 39 24.1	6.808
7	3 47 7.75	2.3526	14 46 10.1	6.724
8	3 49 29.03	2.3568	14 52 51.0	6.639
9	3 51 50.57	2.3611	14 59 26.9	6.554
10	3 54 12.36	2.3653	15 5 57.6	6.468
11	3 56 34.40	2.3695	15 12 23.0	6.380
12	3 58 56.70	2.3737	15 18 43.2	6.292
13	4 1 19.25	2.3779	15 24 58.0	6.203
14	4 3 42.05	2.3821	15 31 7.5	6.112
15	4 6 5.10	2.3863	15 37 11.5	6.020
16	4 8 28.41	2.3905	15 43 9.9	5.927
17	4 10 51.96	2.3946	15 49 2.8	5.834
18	4 13 15.76	2.3987	15 54 50.0	5.740
19	4 15 39.81	2.4028	16 0 31.5	5.644
20	4 18 4.10	2.4069	16 6 7.3	5.547
21	4 20 28.63	2.4109	16 11 37.2	5.450
22	4 22 53.41	2.4150	16 17 1.3	5.352
23	4 25 18.43	2.4190	16 22 19.5	5.253
24	4 27 43.69	2.4230	N.16 27 31.7	5.153

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 27 43.69	2.4230	N.16 27 31.7	5.153
1	4 30 9.19	2.4269	16 32 37.8	5.052
2	4 32 34.92	2.4308	16 37 37.9	4.950
3	4 35 0.88	2.4347	16 42 31.8	4.847
4	4 37 27.08	2.4385	.16 47 19.6	4.743
5	4 39 53.51	2.4423	16 52 1.1	4.639
6	4 42.20.16	2.4461	16 56 36.4	4.534
7	4 44 47.04	2.4498	17 1 5.2	4.428
8	4 47 14.14	2.4536	17 5 27.7	4.321
9	4 49 41.47	2.4573	17 9 43.7	4.213
10	4 52 9.01	2.4609	17 13 53.3	4.104
11	4 54 36.76	2.4644	17 17 56.2	3.994
12	4 57 4.73	2.4679	17 21 52.6	3.884
13	4 59 32.91	2.4714	17 25 42.3	3.773
14	5 2 1.30	2.4748	17 29 25.4	3.661
15	5 4 29.89	2.4782	17 33 1.7	3.548
16	5 6 58.68	2.4815	17 36 31.2	3.435
17	5 9 27.67	2.4848	17 39 53.9	3.321
18	5 11 56.85	2.4880	17 43 9.7	3.206
19	5 14 26.23	2.4912	17 46 18.6	3.091
20	5 16 55.79	2.4943	17 49 20.6	2.975
21	5 19 25.53	2.4973	17 52 15.6	2.858
22	5 21 55.46	2.5003	17 55 3.5	2.740
23	5 24 25.57	2.5033	N.17 57 44.4	2.622

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 26 55.85	2.5061	N.18 0 18.1	2.503
1	5 29 26.30	2.5089	18 2 44.7	2.383
2	5 31 56.92	2.5116	18 5 4.1	2.263
3	5 34 27.70	2.5143	18 7 16.3	2.143
4	5 36 58.64	2.5169	18 9 21.3	2.022
5	5 39 29.73	2.5194	18 11 19.0	1.900
6	5 42 0.97	2.5219	18 13 9.3	1.778
7	5 44 32.36	2.5244	18 14 52.3	1.655
8	5 47 3.89	2.5266	18 16 27.9	1.532
9	5 49 35.55	2.5288	18 17 56.1	1.408
10	5 52 7.35	2.5310	18 19 16.8	1.284
11	5 54 39.28	2.5332	18 20 30.1	1.159
12	5 57 11.33	2.5352	18 21 35.9	1.034
13	5 59 43.50	2.5371	18 22 34.2	0.908
14	6 2 15.78	2.5390	18 23 24.9	0.783
15	6 4 48.17	2.5408	18 24 8.1	0.657
16	6 7 20.67	2.5425	18 24 43.7	0.531
17	6 9 53.27	2.5441	18 25 11.8	0.405
18	6 12 25.96	2.5456	18 25 32.3	0.278
19	6 14 58.74	2.5471	18 25 45.2	0.151
20	6 17 31.61	2.5485	18 25 50.4	0.024
21	6 20 4.56	2.5498	18 25 48.1	0.103
22	6 22 37.58	2.5510	18 25 38.1	0.230
23	6 25 10.67	2.5521	18 25 20.4	0.358
24	6 27 43.83	2.5532	N.18 24 55.1	0.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 27 43.83	2.5532	N.18 24 55.1	0.486
1	6 30 17.05	2.5542	18 24 22.0	0.615
2	6 32 50.33	2.5550	18 23 41.3	0.743
3	6 35 23.66	2.5558	18 22 52.9	0.871
4	6 37 57.03	2.5565	18 21 56.8	0.999
5	6 40 30.44	2.5572	18 20 52.9	1.128
6	6 43 3.89	2.5577	18 19 41.3	1.256
7	6 45 37.36	2.5581	18 18 22.0	1.385
8	6 48 10.86	2.5585	18 16 55.1	1.513
9	6 50 44.38	2.5588	18 15 20.4	1.642
10	6 53 17.91	2.5589	18 13 38.0	1.770
11	6 55 51.45	2.5590	18 11 47.9	1.898
12	6 58 24.99	2.5591	18 9 50.2	2.026
13	7 0 58.53	2.5590	18 7 44.8	2.154
14	7 3 32.07	2.5588	18 5 31.7	2.281
15	7 6 5.59	2.5585	18 3 11.0	2.408
16	7 8 39.09	2.5582	18 0 42.8	2.535
17	7 11 12.57	2.5578	17 58 6.9	2.661
18	7 13 46.02	2.5573	17 55 23.5	2.787
19	7 16 19.44	2.5567	17 52 32.5	2.913
20	7 18 52.82	2.5560	17 49 34.0	3.038
21	7 21 26.16	2.5553	17 46 27.9	3.163
22	7 23 59.45	2.5544	17 43 14.4	3.288
23	7 26 32.68	2.5534	N.17 39 53.4	3.412

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 29 5.86	2.5524	N.17 36 25.0	3.536
1	7 31 38.98	2.5514	17 32 49.1	3.660
2	7 34 12.03	2.5502	17 29 5.8	3.783
3	7 36 45.00	2.5489	17 25 15.1	3.906
4	7 39 17.90	2.5476	17 21 17.1	4.028
5	7 41 50.71	2.5462	17 17 11.8	4.149
6	7 44 23.44	2.5447	17 12 59.2	4.270
7	7 46 56.08	2.5432	17 8 39.4	4.390
8	7 49 28.62	2.5416	17 4 12.4	4.510
9	7 52 1.06	2.5398	16 59 38.2	4.629
10	7 54 33.39	2.5380	16 54 56.9	4.747
11	7 57 5.61	2.5361	16 50 8.5	4.865
12	7 59 37.72	2.5342	16 45 13.1	4.981
13	8 2 9.71	2.5322	16 40 10.7	5.097
14	8 4 41.58	2.5301	16 35 1.4	5.212
15	8 7 13.32	2.5279	16 29 45.2	5.327
16	8 9 44.93	2.5257	16 24 22.1	5.440
17	8 12 16.41	2.5234	16 18 52.3	5.553
18	8 14 47.74	2.5210	16 13 15.7	5.666
19	8 17 18.93	2.5186	16 7 32.4	5.777
20	8 19 49.97	2.5161	16 1 42.5	5.887
21	8 22 20.86	2.5136	15 55 46.0	5.996
22	8 24 51.60	2.5110	15 49 43.0	6.104
23	8 27 22.18	2.5083	15 43 33.5	6.212
24	8 29 52.60	2.5056	N.15 37 17.5	6.319

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 29 52.60	2.5056	N.15 37 17.5	6.319
1	8 32 22.85	2.5028	15 30 55.2	6.424
2	8 34 52.94	2.5000	15 24 26.6	6.529
3	8 37 22.86	2.4972	15 17 51.7	6.633
4	8 39 52.60	2.4942	15 11 10.7	6.736
5	8 42 22.16	2.4912	15 4 23.5	6.837
6	8 44 51.54	2.4882	14 57 30.3	6.937
7	8 47 20.74	2.4851	14 50 31.1	7.036
8	8 49 49.75	2.4820	14 43 26.0	7.134
9	8 52 18.57	2.4788	14 36 15.0	7.232
10	8 54 47.20	2.4756	14 28 58.2	7.328
11	8 57 15.63	2.4723	14 21 35.6	7.423
12	8 59 43.87	2.4690	14 14 7.4	7.517
13	9 2 11.91	2.4656	14 6 33.6	7.609
14	9 4 39.74	2.4622	13 58 54.3	7.700
15	9 7 7.37	2.4588	13 51 9.5	7.791
16	9 9 34.80	2.4553	13 43 19.3	7.880
17	9 12 2.02	2.4518	13 35 23.8	7.968
18	9 14 29.02	2.4483	13 27 23.1	8.055
19	9 16 55.81	2.4448	13 19 17.2	8.140
20	9 19 22.39	2.4412	13 11 6.3	8.224
21	9 21 48.75	2.4375	13 2 50.3	8.306
22	9 24 14.89	2.4339	12 54 29.4	8.390
23	9 26 40.82	2.4303	N.12 46 3.6	8.470

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 29 6.52	2.4266	N.12 37 33.0	8.549
1	9 31 32.00	2.4228	12 28 57.7	8.628
2	9 33 57.26	2.4191	12 20 17.7	8.706
3	9 36 22.29	2.4153	12 11 33.2	8.780
4	9 38 47.10	2.4116	12 2 44.2	8.854
5	9 41 11.68	2.4078	11 53 50.8	8.926
6	9 43 36.03	2.4040	11 44 53.1	8.997
7	9 46 0.15	2.4002	11 35 51.1	9.068
8	9 48 24.05	2.3964	11 26 44.9	9.137
9	9 50 47.72	2.3925	11 17 34.7	9.204
10	9 53 11.15	2.3887	11 8 20.4	9.270
11	9 55 34.35	2.3848	10 59 2.2	9.336
12	9 57 57.32	2.3810	10 49 40.2	9.399
13	10 0 20.06	2.3771	10 40 14.4	9.461
14	10 2 42.57	2.3732	10 30 44.9	9.522
15	10 5 4.84	2.3693	10 21 11.7	9.582
16	10 7 26.88	2.3654	10 11 35.0	9.640
17	10 9 48.69	2.3615	10 1 54.8	9.697
18	10 12 10.26	2.3576	9 52 11.3	9.753
19	10 14 31.60	2.3537	9 42 24.5	9.807
20	10 16 52.70	2.3498	9 32 34.5	9.860
21	10 19 13.57	2.3459	9 22 41.3	9.912
22	10 21 34.21	2.3421	9 12 45.1	9.962
23	10 23 54.62	2.3382	9 2 45.9	10.011
24	10 26 14.79	2.3343	N. 8 52 43.8	10.058

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 26 14.79	2.3343	N. 8 52 43.8	10.058
1	10 28 34.73	2.3304	8 42 38.9	10.104
2	10 30 54.44	2.3266	8 32 31.3	10.149
3	10 33 13.92	2.3228	8 22 21.0	10.193
4	10 35 33.17	2.3190	8 12 8.1	10.235
5	10 37 52.19	2.3151	8 1 52.7	10.276
6	10 40 10.98	2.3113	7 51 35.0	10.316
7	10 42 29.54	2.3075	7 41 15.0	10.353
8	10 44 47.88	2.3037	7 30 52.7	10.390
9	10 47 5.99	2.2999	7 20 28.2	10.425
10	10 49 23.87	2.2962	7 10 1.7	10.459
11	10 51 41.53	2.2925	6 59 33.1	10.492
12	10 53 58.97	2.2888	6 49 2.6	10.524
13	10 56 16.19	2.2851	6 38 30.2	10.554
14	10 58 33.18	2.2814	6 27 56.1	10.583
15	11 0 49.95	2.2777	6 17 20.2	10.612
16	11 3 6.50	2.2740	6 6 42.7	10.639
17	11 5 22.83	2.2704	5 56 3.6	10.664
18	11 7 38.95	2.2668	5 45 23.1	10.688
19	11 9 54.85	2.2633	5 34 41.2	10.710
20	11 12 10.54	2.2598	5 23 57.9	10.731
21	11 [illegible] 26.02	2.2562	5 13 13.4	10.752
22	11 16 41.28	2.2527	5 2 27.7	10.771
23	11 18 56.33	2.2492	N. 4 51 40.9	10.788

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 21 11.18	2.2456	N. 4 40 53.1	10.804
1	11 23 25.82	2.2424	4 30 4.4	10.819
2	11 25 40.26	2.2389	4 19 14.8	10.833
3	11 27 54.49	2.2355	4 8 24.4	10.847
4	11 30 8.52	2.2322	3 57 33.2	10.859
5	11 32 22.35	2.2289	3 46 41.4	10.868
6	11 34 35.99	2.2256	3 35 49.0	10.877
7	11 36 49.43	2.2223	3 24 56.1	10.885
8	11 39 2.67	2.2191	3 14 2.8	10.891
9	11 41 15.72	2.2159	3 3 9.1	10.897
10	11 43 28.58	2.2127	2 52 15.1	10.902
11	11 45 41.25	2.2096	2 41 20.9	10.905
12	11 47 53.73	2.2065	2 30 26.5	10.907
13	11 50 6.03	2.2034	2 19 32.0	10.908
14	11 52 18.14	2.2003	2 8 37.5	10.908
15	11 54 30.07	2.1973	1 57 43.0	10.908
16	11 56 41.82	2.1944	1 46 48.6	10.906
17	11 58 53.39	2.1914	1 35 54.4	10.902
18	12 1 4.79	2.1885	1 25 0.4	10.897
19	12 3 16.02	2.1857	1 14 6.7	10.892
20	12 5 27.07	2.1828	1 3 13.4	10.885
21	12 7 37.96	2.1800	0 52 20.5	10.877
22	12 9 48.67	2.1772	0 41 28.1	10.868
23	12 11 59.22	2.1744	0 30 36.3	10.858
24	12 14 9.60	2.1717	N. 0 19 45.1	10.847

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 14 9.60	2.1717	N. 0 19 45.1	10.847
1	12 16 19.82	2.1691	N. 0 8 54.6	10.836
2	12 18 29.89	2.1664	S. 0 1 55.2	10.823
3	12 20 39.80	2.1638	0 12 44.2	10.809
4	12 22 49.55	2.1613	0 23 32.3	10.794
5	12 24 59.15	2.1588	0 34 19.5	10.778
6	12 27 8.60	2.1563	0 45 5.7	10.761
7	12 29 17.90	2.1538	0 55 50.8	10.743
8	12 31 27.05	2.1514	1 6 34.9	10.724
9	12 33 36.06	2.1490	1 17 17.8	10.705
10	12 35 44.93	2.1466	1 27 59.5	10.686
11	12 37 53.65	2.1443	1 38 40.0	10.663
12	12 40 2.24	2.1420	1 49 19.1	10.641
13	12 42 10.69	2.1398	1 59 56.9	10.618
14	12 44 19.01	2.1376	2 10 33.2	10.594
15	12 46 27.20	2.1354	2 21 8.0	10.568
16	12 48 35.26	2.1332	2 31 41.3	10.541
17	12 50 43.19	2.1311	2 42 13.0	10.514
18	12 52 50.99	2.1291	2 52 43.0	10.486
19	12 54 58.67	2.1270	3 3 11.4	10.458
20	12 57 6.23	2.1250	3 13 38.0	10.429
21	12 59 13.67	2.1230	3 24 2.8	10.398
22	13 1 20.99	2.1211	3 34 25.8	10.367
23	13 3 28.20	2.1193	S. 3 44 46.9	10.335

SUNDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 5 35.31	2.1174	S. 3 55 6.0	10.302

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	6	19	8.6
○ Full Moon, . . .	14	22	37.3
☾ Last Quarter, . .	22	9	22.4
● New Moon, . .	29	1	4.7

	d	h
☾ Apogee, ...	10	18.0
☾ Perigee, ...	26	13.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	Sun	W.	31° 26′ 34″	2603	33° 5′ 25″	2618	34° 43′ 55″	2636	36° 22′ 2″	2652
	Spica	E.	40 54 12	2321	39 8 43	2341	37 23 43	2362	35 39 13	2384
	Saturn	E.	66 27 49	2286	64 41 32	2304	62 55 39	2322	61 10 12	2340
	Antares	E.	86 47 12	2341	85 2 11	2357	83 17 35	2375	81 33 24	2393
3	Sun	W.	44 26 46	2743	46 2 29	2761	47 37 48	2781	49 12 41	2800
	Spica	E.	27 5 3	2510	25 24 4	2541	23 43 48	2575	22 4 19	2612
	Saturn	E.	52 29 22	2430	50 46 30	2449	49 4 5	2467	47 22 6	2487
	Antares	E.	72 59 2	2487	71 17 30	2507	69 36 26	2527	67 55 50	2546
4	Sun	W.	57 0 50	2897	58 33 13	2918	60 5 12	2936	61 36 46	2954
	Saturn	E.	38 58 51	2583	37 19 32	2601	35 40 38	2621	34 2 11	2639
	Antares	E.	59 39 50	2651	58 2 4	2672	56 24 46	2693	54 47 57	2715
	a Aquilæ	E.	107 23 47	3056	105 54 44	3067	104 25 54	3078	102 57 17	3089
5	Sun	W.	69 8 44	3047	70 37 59	3065	72 6 52	3082	73 35 24	3100
	Mars	W.	25 16 51	2920	26 48 45	2938	28 20 16	2954	29 51 26	2972
	Antares	E.	46 51 13	2828	45 17 22	2852	43 44 1	2876	42 11 11	2901
	a Aquilæ	E.	95 38 1	3157	94 11 0	3171	92 44 16	3187	91 17 51	3202
6	Sun	W.	80 52 53	3181	82 19 25	3196	83 45 39	3211	85 11 35	3226
	Mars	W.	37 22 2	3052	38 51 11	3067	40 20 1	3081	41 48 33	3096
	Antares	E.	34 35 20	3043	33 6 0	3075	31 37 20	3109	30 9 21	3146
	a Aquilæ	E.	84 10 29	3284	82 45 59	3302	81 21 50	3319	79 58 1	3337
7	Sun	W.	92 17 10	3291	93 41 32	3303	95 5 40	3314	96 29 35	3326
	Mars	W.	49 7 8	3160	50 34 5	3172	52 0 48	3183	53 27 19	3193
	Spica	W.	25 37 31	3025	27 7 13	3026	28 36 53	3030	30 6 29	3033
	a Aquilæ	E.	73 4 9	3431	71 42 27	3451	70 21 8	3471	69 0 11	3492
	Fomalhaut	E.	105 52 10	3293	104 27 50	3299	103 3 37	3305	101 39 31	3312
	Jupiter	E.	108 13 17	2896	106 40 53	2906	105 8 42	2916	103 36 4	2926
8	Sun	W.	103 26 11	3372	104 48 59	3381	106 11 37	3388	107 34 7	3396
	Mars	W.	60 36 50	3240	62 2 12	3247	63 27 25	3256	64 52 29	3264
	Spica	W.	37 33 17	3055	39 2 22	3059	40 31 22	3064	42 0 16	3068
	a Aquilæ	E.	62 21 25	3604	61 2 55	3630	59 44 53	3656	58 27 19	3682
	Fomalhaut	E.	94 40 54	3344	93 17 33	3350	91 54 19	3356	90 31 12	3362
	Jupiter	E.	95 59 49	2966	94 28 58	2977	92 58 15	2988	91 27 42	2999
9	Sun	W.	114 24 46	3423	115 46 36	3429	117 8 20	3432	118 30 0	3436
	Mars	W.	71 55 59	3289	73 20 23	3294	74 44 41	3298	76 8 56	3302
	Spica	W.	49 23 35	3085	50 52 3	3088	52 20 27	3091	53 48 48	3093
	Saturn	W.	23 20 14	3090	24 48 36	3092	26 16 55	3094	27 45 12	3096
	a Aquilæ	E.	52 7 11	3843	50 52 53	3880	49 39 13	3920	48 26 14	3962
	Fomalhaut	E.	83 37 28	3394	82 15 5	3400	80 52 49	3407	79 30 40	3413
	Jupiter	E.	83 56 42	3016	82 26 48	3019	80 56 59	3022	79 27 15	3025
10	Sun	W.	125 17 33	3446	126 38 57	3446	128 0 21	3447	129 21 44	3447
	Mars	W.	83 9 20	3311	84 33 19	3312	85 57 16	3313	87 21 14	3313
	Spica	W.	61 10 6	3097	62 38 19	3097	64 6 32	3097	65 34 45	3097
	Saturn	W.	35 6 23	3098	36 34 35	3099	38 2 46	3098	39 30 58	3096
	a Aquilæ	E.	42 33 25	4244	41 25 40	4317	40 19 3	4396	39 13 38	4483
	Jupiter	E.	71 59 15	3034	70 29 45	3035	69 0 16	3036	67 30 48	3036
	Fomalhaut	E.	72 41 45	3446	71 20 21	3454	69 59 5	3461	68 37 57	3469
	a Pegasi	E.	87 12 5	3345	85 48 45	3347	84 25 28	3349	83 2 13	3350

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	Sun	W.	37° 59′ 47″	2669	39° 37′ 8″	2687	41° 14′ 5″	2705	42° 50′ 38″	2724
	Spica	E.	33 55 15	2407	32 11 50	2431	30 28 59	2455	28 46 43	2481
	Saturn	E.	59 25 11	2357	57 40 34	2375	55 56 24	2394	54 12 40	2412
	Antares	E.	79 49 39	2411	78 6 20	2429	76 23 27	2448	74 41 1	2467
3	Sun	W.	50 47 9	2819	52 21 12	2839	53 54 49	2858	55 28 2	2877
	Spica	E.	20 25 40	2655	18 48 0	2704	17 11 26	2763	15 36 10	2838
	Saturn	E.	45 40 34	2506	43 59 29	2525	42 18 50	2544	40 38 38	2563
	Antares	E.	66 15 41	2567	64 36 1	2586	62 56 49	2606	61 18 5	2629
4	Sun	W.	63 7 57	2973	64 38 44	2992	66 9 7	3010	67 39 7	3029
	Saturn	E.	32 24 9	2658	30 46 33	2678	29 9 23	2697	27 32 39	2716
	Antares	E.	53 11 37	2738	51 35 47	2760	50 0 26	2782	48 25 35	2805
	α Aquilæ	E.	101 28 54	3103	100 0 47	3114	98 32 55	3129	97 5 20	3142
5	Sun	W.	75 3 34	3116	76 31 24	3133	77 58 53	3149	79 26 3	3166
	Mars	W.	31 22 14	2989	32 52 41	3005	34 22 48	3021	35 52 34	3036
	Antares	E.	40 38 53	2937	39 7 8	2963	37 35 56	2981	36 5 20	3010
	α Aquilæ	E.	89 51 44	3219	88 25 57	3234	87 0 28	3251	85 35 19	3267
6	Sun	W.	86 37 14	3240	88 2 36	3253	89 27 43	3266	90 52 34	3279
	Mars	W.	43 16 49	3110	44 44 47	3123	46 12 29	3136	47 39 56	3148
	Antares	E.	28 42 7	3187	27 15 42	3233	25 50 12	3283	24 25 41	3338
	α Aquilæ	E.	78 34 32	3356	77 11 25	3373	75 48 38	3393	74 26 13	3411
7	Sun	W.	97 53 17	3336	99 16 47	3345	100 40 6	3356	102 3 14	3365
	Mars	W.	54 53 36	3204	56 19 41	3213	57 45 35	3222	59 11 17	3231
	Spica	W.	31 36 1	3037	33 5 28	3041	34 34 50	3046	36 4 6	3050
	α Aquilæ	E.	67 39 38	3518	66 19 28	3535	64 59 42	3557	63 40 21	3580
	Fomalhaut	E.	100 15 33	3318	98 51 42	3325	97 27 59	3331	96 4 23	3337
	Jupiter	E.	102 4 58	2936	100 33 24	2945	99 2 2	2953	97 30 50	2962
8	Sun	W.	108 56 29	3402	110 18 43	3408	111 40 50	3414	113 2 51	3419
	Mars	W.	66 17 25	3266	67 42 14	3274	69 6 55	3280	70 31 30	3286
	Spica	W.	43 29 5	3072	44 57 49	3076	46 26 28	3079	47 55 3	3082
	α Aquilæ	E.	57 10 14	3711	55 53 39	3742	54 37 36	3773	53 22 6	3807
	Fomalhaut	E.	89 8 13	3369	87 45 21	3375	86 22 36	3381	84 59 58	3386
	Jupiter	E.	89 57 16	2996	88 26 58	3001	86 56 46	3006	85 26 41	3011
9	Sun	W.	119 51 36	3436	121 13 9	3441	122 34 39	3443	123 56 7	3445
	Mars	W.	77 33 6	3304	78 57 13	3306	80 21 18	3308	81 45 20	3310
	Spica	W.	55 17 7	3094	56 45 24	3096	58 13 39	3096	59 41 53	3097
	Saturn	W.	29 13 28	3096	30 41 43	3096	32 9 57	3097	33 38 10	3097
	α Aquilæ	E.	47 14 0	4012	46 2 32	4064	44 51 55	4118	43 42 11	4179
	Fomalhaut	E.	78 8 38	3419	76 46 43	3426	75 24 56	3433	74 3 17	3439
	Jupiter	E.	77 57 33	3028	76 27 55	3030	74 58 20	3032	73 28 46	3034
10	Sun	W.	130 43 7	3447	132 4 30	3446	133 25 54	3446	134 47 19	3444
	Mars	W.	88 45 11	3312	90 9 9	3311	91 33 8	3310	92 57 7	3309
	Spica	W.	67 2 58	3096	68 31 12	3096	69 59 28	3094	71 27 45	3091
	Saturn	W.	40 59 12	3096	42 27 26	3096	43 55 42	3093	45 24 0	3092
	α Aquilæ	E.	38 9 31	4580	37 6 49	4688	36 5 39	4806	35 6 9	4946
	Jupiter	E.	66 1 19	3035	64 31 50	3034	63 2 20	3034	61 32 49	3032
	Fomalhaut	E.	67 16 58	3477	65 56 8	3486	64 35 28	3495	63 14 58	3505
	α Pegasi	E.	81 38 59	3351	80 15 47	3354	78 52 38	3355	77 29 30	3357

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Mars	W.	94° 21′ 9″	3306	95° 45′ 12″	3306	97° 9′ 18″	3302	98° 33′ 27″	3299
	Spica	W.	72 56 5	3090	74 24 27	3087	75 52 52	3086	77 21 20	3082
	Saturn	W.	46 52 19	3090	48 20 41	3087	49 49 6	3084	51 17 35	3082
	Antares	W.	28 20 38	3350	29 43 52	3325	31 7 34	3302	32 31 43	3261
	Jupiter	E.	60 3 16	3030	58 33 41	3029	57 4 4	3026	55 34 24	3024
	Fomalhaut	E.	61 54 39	3515	60 34 31	3526	59 14 36	3538	57 54 54	3560
	a Pegasi	E.	76 6 24	3358	74 43 20	3361	73 20 19	3363	71 57 20	3365
12	Mars	W.	105 35 8	3281	106 59 42	3276	108 24 20	3272	109 49 5	3267
	Spica	W.	84 44 43	3063	86 13 38	3059	87 42 38	3054	89 11 44	3050
	Saturn	W.	58 40 56	3063	60 9 51	3060	61 38 50	3054	63 7 56	3049
	Antares	W.	39 38 2	3198	41 4 13	3186	42 30 40	3173	43 57 21	3161
	Jupiter	E.	48 5 8	3007	46 35 3	3003	45 4 54	2998	43 34 40	2994
	Fomalhaut	E.	51 20 18	3635	50 2 21	3667	48 44 48	3681	47 27 41	3707
	a Pegasi	E.	65 3 13	3381	63 40 35	3366	62 18 3	3392	60 55 37	3397
	a Arietis	E.	108 5 12	3190	106 38 51	3183	105 12 22	3177	103 45 45	3171
13	Spica	W.	96 38 44	3023	98 8 28	3017	99 38 20	3011	101 8 19	3006
	Saturn	W.	70 34 59	3022	72 4 45	3016	73 34 38	3010	75 4 38	3004
	Antares	W.	51 14 14	3107	52 42 15	3097	54 10 28	3087	55 38 53	3078
	Jupiter	E.	36 2 1	2970	34 31 11	2966	33 0 15	2960	31 29 12	2966
	Fomalhaut	E.	41 10 13	3896	39 56 48	3946	38 44 15	4006	37 32 41	4072
	a Pegasi	E.	54 5 21	3438	52 43 48	3451	51 22 29	3463	50 1 24	3478
	a Arietis	E.	96 30 43	3138	95 3 19	3130	93 35 46	3124	92 8 6	3118
14	Saturn	W.	82 36 40	2970	84 7 30	2963	85 38 29	2956	87 9 37	2948
	Antares	W.	63 3 53	3031	64 33 27	3022	66 3 12	3014	67 33 8	3004
	a Pegasi	E.	43 20 50	3589	42 2 4	3623	40 43 55	3651	39 26 26	3700
	a Arietis	E.	84 47 46	3086	83 19 19	3079	81 50 44	3073	80 22 2	3067
15	Saturn	W.	94 47 38	2911	96 19 43	2904	97 51 57	2896	99 24 21	2888
	Antares	W.	75 5 35	2961	76 36 37	2952	78 7 50	2943	79 39 14	2934
	a Arietis	E.	72 56 41	3039	71 27 16	3034	69 57 45	3029	68 28 8	3026
	Aldebaran	E.	105 15 20	2893	103 42 52	2886	102 10 15	2878	100 37 28	2869
16	Antares	W.	87 18 56	2893	88 51 24	2884	90 24 3	2876	91 56 52	2868
	a Aquilæ	W.	44 0 27	3859	45 14 28	3795	46 29 35	3788	47 45 42	3686
	a Arietis	E.	60 58 47	3006	59 28 42	3004	57 58 34	3002	56 28 24	3001
	Aldebaran	E.	92 50 55	2829	91 17 5	2821	89 43 5	2813	88 8 54	2805
17	Antares	W.	99 43 33	2828	101 17 24	2821	102 51 25	2813	104 25 36	2805
	a Aquilæ	W.	54 19 18	3469	55 40 17	3434	57 1 55	3401	58 24 10	3371
	a Arietis	E.	48 57 27	3006	47 27 22	3010	45 57 22	3016	44 27 29	3024
	Aldebaran	E.	80 15 16	2763	78 39 59	2754	77 4 31	2746	75 28 52	2736
18	a Aquilæ	W.	65 23 36	3241	66 48 57	3219	68 14 44	3198	69 40 55	3176
	Fomalhaut	W.	33 58 52	3966	35 11 15	3851	36 25 25	3756	37 41 13	3670
	Jupiter	W.	26 50 44	2666	28 28 9	2606	30 5 48	2646	31 43 41	2636
	a Arietis	E.	37 1 14	3096	35 32 58	3119	34 5 12	3148	32 38 1	3182
	Aldebaran	E.	67 27 45	2694	65 50 57	2685	64 13 57	2676	62 36 45	2666
	Pollux	E.	110 58 16	2783	109 23 26	2772	107 48 22	2763	106 13 4	2752
19	a Aquilæ	W.	76 57 25	3093	78 25 43	3078	79 54 20	3065	81 23 13	3061
	Fomalhaut	W.	44 20 41	3347	45 43 58	3299	47 8 11	3254	48 33 16	3212
	Jupiter	W.	39 56 23	2588	41 35 36	2577	43 15 2	2568	44 54 41	2559

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	Mars W.	99° 57′ 40″	3296	101° 21′ 55″	3293	102° 46′ 15″	3289	104° 10′ 39″	3286
	Spica W.	78 49 52	3078	80 18 28	3075	81 47 8	3071	83 15 53	3067
	Saturn W.	52 46 6	3078	54 14 42	3075	55 43 22	3072	57 12 6	3067
	Antares W.	33 56 17	3261	35 21 14	3243	36 46 32	3228	38 12 8	3213
	Jupiter E.	54 4 40	3021	52 34 53	3018	51 5 2	3014	49 35 7	3011
	Fomalhaut E.	56 35 25	3564	55 16 11	3580	53 57 15	3597	52 38 37	3614
	a Pegasi E.	70 34 24	3368	69 11 31	3371	67 48 41	3374	66 25 55	3378
12	Mars W.	111 13 55	3262	112 38 51	3257	113 3 53	3251	115 29 2	3246
	Spica W.	90 40 55	3045	92 10 12	3039	93 39 36	3034	95 9 7	3029
	Saturn W.	64 37 8	3044	66 6 26	3039	67 35 50	3034	69 5 21	3028
	Antares W.	45 24 17	3149	46 51 27	3138	48 18 50	3128	49 46 26	3118
	Jupiter E.	42 4 20	2989	40 33 54	2985	39 3 22	2980	37 32 45	2975
	Fomalhaut E.	46 11 1	3737	44 54 53	3770	43 39 20	3807	42 24 25	3849
	a Pegasi E.	59 33 17	3403	58 11 4	3411	56 49 0	3420	55 27 6	3428
	a Arietis E.	102 19 1	3164	100 52 9	3157	99 25 8	3150	97 57 59	3144
13	Spica W.	102 38 26	2998	104 8 41	2993	105 39 3	2986	107 9 33	2979
	Saturn W.	76 34 46	2997	78 5 2	2991	79 35 26	2985	81 5 58	2977
	Antares W.	57 7 30	3066	58 36 19	3059	60 5 19	3050	61 34 30	3040
	Jupiter E.	29 58 2	2950	28 26 46	2944	26 55 24	2939	25 23 54	2934
	Fomalhaut E.	36 22 12	4147	35 12 56	4232	34 5 0	4329	32 58 34	4439
	a Pegasi E.	48 40 35	3494	47 20 4	3513	45 59 54	3535	44 40 8	3560
	a Arietis E.	90 40 18	3111	89 12 22	3106	87 44 18	3098	86 16 6	3091
14	Saturn W.	88 40 55	2942	90 12 21	2934	91 43 57	2926	93 15 43	2919
	Antares W.	69 3 16	2996	70 33 35	2987	72 4 4	2978	73 34 44	2969
	a Pegasi E.	38 9 39	3746	36 53 40	3799	35 38 37	3860	34 24 37	3930
	a Arietis E.	78 53 12	3061	77 24 15	3056	75 55 11	3050	74 26 0	3043
15	Saturn W.	100 56 55	2880	102 29 40	2872	104 2 35	2865	105 35 39	2856
	Antares W.	81 10 49	2926	82 42 35	2918	84 14 31	2909	85 46 38	2901
	a Arietis E.	66 58 27	3021	65 28 40	3016	63 58 47	3012	62 28 49	3009
	Aldebaran E.	99 4 30	2862	97 31 22	2853	95 58 3	2845	94 24 34	2838
16	Antares W.	93 29 52	2860	95 3 2	2852	96 36 22	2845	98 9 52	2836
	a Aquilæ W.	49 2 45	3635	50 20 42	3589	51 39 28	3546	52 59 1	3506
	a Arietis E.	54 58 12	3000	53 27 59	3001	51 57 47	3001	50 27 36	3003
	Aldebaran E.	86 34 33	2797	85 0 1	2788	83 25 17	2779	81 50 22	2771
17	Antares W.	105 59 57	2798	107 34 28	2791	109 9 8	2783	110 43 58	2776
	a Aquilæ W.	59 47 0	3342	61 10 23	3314	62 34 18	3288	63 58 43	3265
	a Arietis E.	42 57 46	3033	41 28 14	3043	39 58 55	3058	38 29 54	3075
	Aldebaran E.	73 53 2	2729	72 17 0	2720	70 40 47	2711	69 4 22	2702
18	*a* Aquilæ W.	71 7 30	3160	72 34 27	3142	74 1 46	3124	75 29 26	3109
	Fomalhaut W.	38 58 32	3593	40 17 14	3522	41 37 14	3458	42 58 25	3400
	Jupiter W.	33 21 46	2626	35 0 5	2616	36 38 38	2607	38 17 24	2597
	a Arietis E.	31 11 30	3224	29 45 49	3276	28 21 8	3337	26 57 39	3409
	Aldebaran E.	60 59 22	2658	59 21 46	2649	57 43 58	2640	56 5 58	2631
	Pollux E.	104 37 33	2741	103 1 48	2732	101 25 50	2722	99 49 39	2711
19	*a* Aquilæ W.	82 52 23	3038	84 21 49	3026	85 51 29	3014	87 21 24	3004
	Fomalhaut W.	49 59 11	3173	51 25 52	3137	52 53 17	3103	54 21 23	3073
	Jupiter W.	46 34 33	2549	48 14 38	2539	49 54 57	2530	51 35 30	2520

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	α Pegasi	W.	30° 39′ 17″	3858	31° 53′ 19″	3739	33° 9′ 25″	3634	34° 27′ 23″	3541
	Aldebaran	E	54 27 45	2622	52 49 20	2612	51 10 42	2603	49 31 51	2594
	Pollux	E.	98 13 14	2701	96 36 36	2692	94 59 46	2682	93 22 42	2673
	Sun	E.	132 32 7	2955	131 0 58	2946	129 29 37	2935	127 58 3	2926
20	α Aquilæ	W.	88 51 32	2994	90 21 52	2984	91 52 25	2975	93 23 9	2967
	Fomalhaut	W.	55 50 6	3043	57 19 26	3014	58 49 21	2988	60 19 49	2963
	Jupiter	W.	53 16 15	2510	54 57 15	2500	56 38 28	2490	58 19 55	2480
	α Pegasi	W.	41 19 41	3203	42 45 47	3153	44 12 53	3106	45 40 55	3065
	Aldebaran	E.	41 14 26	2547	39 34 18	2537	37 53 56	2527	36 13 21	2517
	Pollux	E.	85 14 13	2626	83 35 53	2618	81 57 21	2607	80 18 36	2599
	Sun	E.	120 16 56	2873	118 44 3	2862	117 10 56	2852	115 37 35	2842
21	α Aquilæ	W.	100 59 6	2936	102 30 39	2932	104 2 17	2930	105 33 58	2927
	Fomalhaut	W.	67 59 28	2856	69 32 43	2838	71 6 22	2820	72 40 24	2802
	Jupiter	W.	66 50 39	2431	68 33 30	2420	70 16 36	2410	71 59 56	2401
	α Pegasi	W.	53 12 51	2894	54 45 17	2868	56 18 17	2842	57 51 51	2817
	Aldebaran	E.	27 46 58	2467	26 4 59	2458	24 22 47	2448	22 40 21	2438
	Pollux	E.	72 1 52	2656	70 21 56	2648	68 41 49	2640	67 1 31	2632
	Sun	E.	107 47 25	2788	106 12 41	2777	104 37 43	2766	103 2 30	2755
22	Jupiter	W.	80 40 13	2350	82 25 0	2339	84 10 1	2330	85 55 17	2320
	Fomalhaut	W.	80 35 51	2729	82 11 53	2715	83 48 13	2703	85 24 49	2692
	α Pegasi	W.	65 47 11	2711	67 23 36	2693	69 0 25	2676	70 37 37	2659
	α Arietis	W.	23 18 44	3347	24 42 1	3217	26 7 50	3108	27 35 50	3017
	Pollux	E.	58 37 26	2498	56 56 10	2492	55 14 45	2487	53 33 13	2482
	Sun	E.	95 2 50	2701	93 26 11	2689	91 49 17	2678	90 12 8	2666
23	Jupiter	W.	94 45 15	2270	96 31 58	2260	98 18 54	2251	100 6 5	2243
	Fomalhaut	W.	93 31 26	2642	95 9 24	2635	96 47 32	2627	98 25 50	2621
	α Pegasi	W.	78 48 57	2587	80 28 10	2574	82 7 41	2562	83 47 28	2551
	α Arietis	W.	35 19 48	2712	36 56 12	2670	38 33 32	2632	40 11 44	2599
	Pollux	E.	45 4 20	2473	43 22 27	2474	41 40 37	2477	39 58 51	2482
	Sun	E.	82 2 47	2614	80 24 11	2604	78 45 22	2594	77 6 19	2584
24	Jupiter	W.	109 5 20	2198	110 53 50	2190	112 42 32	2182	114 31 26	2175
	Fomalhaut	W.	106 39 3	2603	108 17 54	2602	109 56 46	2603	111 35 37	2605
	α Pegasi	W.	92 9 59	2504	93 51 6	2497	95 32 23	2491	97 13 49	2485
	α Arietis	W.	48 32 57	2469	50 14 54	2449	51 57 19	2430	53 40 11	2412
	Sun	E.	68 47 39	2536	67 7 16	2527	65 26 40	2518	63 45 52	2510
25	α Pegasi	W.	105 42 34	2470	107 24 30	2470	109 6 25	2472	110 48 18	2473
	α Arietis	W.	62 20 18	2342	64 5 17	2331	65 50 32	2321	67 36 1	2311
	Aldebaran	W.	28 32 56	2174	30 22 2	2169	32 11 17	2163	34 0 40	2158
	Sun	E.	55 19 6	2472	53 37 14	2466	51 55 13	2460	50 13 4	2455
26	α Pegasi	W.	119 16 19	2507	120 57 23	2518	122 38 11	2533	124 18 39	2548
	α Arietis	W.	76 26 29	2277	78 13 3	2272	79 59 43	2268	81 46 29	2265
	Aldebaran	W.	43 9 23	2136	44 59 24	2135	46 49 30	2133	48 39 39	2131
	Sun	E.	41 40 31	2433	39 57 44	2431	38 14 53	2429	36 31 59	2426
31	Sun	W.	25 35 41	2750	27 11 14	2768	28 46 24	2785	30 21 11	2802
	Saturn	E.	45 35 23	2462	43 53 16	2479	42 11 33	2494	40 30 12	2512
	Antares	E.	65 2 36	2511	63 21 38	2530	61 41 6	2548	60 1 0	2567
	α Aquilæ	E.	112 13 44	2956	110 42 38	2962	109 11 37	2967	107 40 43	2973

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	α Pegasi	W.	35° 47′ 2″	3456	37° 8′ 13″	3384	38° 30′ 48″	3317	39° 54′ 40″	3258
	Aldebaran	E	47 52 48	2585	46 13 32	2576	44 34 3	2566	42 54 21	2556
	Pollux	E.	91 45 26	2663	90 7 57	2654	88 30 15	2644	86 52 20	2635
	Sun	E.	126 26 16	2915	124 54 16	2904	123 22 2	2894	121 49 36	2883
20	α Aquilæ	W.	94 54 3	2959	96 25 7	2953	97 56 19	2946	99 27 39	2941
	Fomalhaut	W.	61 50 48	2939	63 22 17	2917	64 54 14	2896	66 26 38	2876
	Jupiter	W.	60 1 35	2470	61 43 30	2460	63 25 39	2450	65 8 2	2441
	α Pegasi	W.	47 9 48	3026	48 39 29	2989	50 9 55	2956	51 41 3	2924
	Aldebaran	E.	34 32 32	2507	32 51 29	2498	31 10 13	2488	29 28 43	2477
	Pollux	E.	78 39 39	2590	77 0 30	2581	75 21 9	2572	73 41 36	2564
	Sun	E.	114 4 1	2831	112 30 13	2820	110 56 11	2809	109 21 55	2798
21	α Aquilæ	W.	107 5 42	2937	108 37 27	2927	110 9 12	2928	111 40 55	2931
	Fomalhaut	W.	74 14 49	2786	75 49 35	2771	77 24 41	2756	79 0 7	2742
	Jupiter	W.	73 43 30	2390	75 27 19	2380	77 11 22	2370	78 55 40	2360
	α Pegasi	W.	59 25 57	2794	61 0 33	2771	62 35 39	2750	64 11 12	2731
	Aldebaran	E.	20 57 40	2428	19 14 45	2417	17 31 35	2408	15 48 11	2398
	Pollux	E.	65 21 2	2525	63 40 23	2517	61 59 33	2510	60 18 34	2504
	Sun	E.	101 27 3	2744	99 51 21	2733	98 15 25	2722	96 39 15	2711
22	Jupiter	W.	87 40 48	2310	89 26 33	2300	91 12 33	2290	92 58 47	2280
	Fomalhaut	W.	87 1 40	2681	88 38 46	2670	90 16 6	2660	91 53 39	2650
	α Pegasi	W.	72 15 12	2643	73 53 8	2628	75 31 25	2613	77 10 2	2600
	α Arietis	W.	29 5 42	2938	30 37 13	2869	32 10 11	2810	33 44 26	2759
	Pollux	E.	51 51 35	2479	50 9 52	2475	48 28 4	2473	46 46 13	2472
	Sun	E.	88 34 45	2657	86 57 7	2646	85 19 15	2635	83 41 8	2625
23	Jupiter	W.	101 53 29	2238	103 41 7	2226	105 28 59	2216	107 17 3	2207
	Fomalhaut	W.	100 4 16	2616	101 42 49	2611	103 21 29	2607	105 0 14	2604
	α Pegasi	W.	85 27 31	2540	87 7 48	2530	88 48 19	2521	90 29 3	2512
	α Arietis	W.	41 50 41	2568	43 30 20	2540	45 10 38	2515	46 51 31	2497
	Pollux	E.	38 17 12	2489	36 35 43	2499	34 54 28	2512	33 13 32	2530
	Sun	E.	75 27 2	2674	73 47 31	2664	72 7 47	2554	70 27 49	2545
24	Jupiter	W.	116 20 32	2167	118 9 48	2160	119 59 15	2154	121 48 53	2147
	Fomalhaut	W.	113 14 25	2608	114 53 9	2613	116 31 46	2619	118 10 15	2627
	α Pegasi	W.	98 55 23	2480	100 37 4	2477	102 18 50	2474	104 0 40	2471
	α Arietis	W.	55 23 29	2396	57 7 10	2380	58 51 13	2366	60 35 36	2353
	Sun	E.	62 4 53	2502	60 23 42	2494	58 42 20	2487	57 0 48	2480
25	α Pegasi	W.	112 30 9	2477	114 11 54	2482	115 53 32	2489	117 35 1	2497
	α Arietis	W.	69 21 44	2303	71 7 39	2296	72 53 46	2288	74 40 3	2282
	Aldebaran	W.	35 50 11	2153	37 39 49	2148	39 29 35	2144	41 19 27	2141
	Sun	E.	48 30 47	2449	46 48 22	2445	45 5 51	2441	43 23 14	2436
26	α Pegasi	W.	125 58 45	2567	127 38 25	2589	129 17 35	2614	130 56 11	2642
	α Arietis	W.	83 33 19	2264	85 20 12	2262	87 7 8	2262	88 54 4	2262
	Aldebaran	W.	50 29 51	2130	52 20 5	2130	54 10 19	2129	56 0 34	2130
	Sun	E.	34 49 2	2425	33 6 3	2425	31 23 4	2426	29 40 5	2425
31	Sun	W.	31 55 36	2820	33 29 38	2837	35 3 18	2855	36 36 35	2873
	Saturn	E.	38 49 16	2530	37 8 44	2548	35 28 37	2565	33 48 54	2584
	Antares	E.	58 21 20	2587	56 42 7	2607	55 3 21	2627	53 25 3	2649
	α Aquilæ	E.	106 9 57	2981	104 39 21	2991	103 8 57	3001	101 38 45	3011

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	10 40 41.72	9.080	N. 8 22 16.2	54.41	15 53.65	64.43	0 1.61	0.776
Mon.	2	10 44 19.45	9.067	8 0 26.7	54.74	15 53.88	64.38	0 20.38	0.789
Tues.	3	10 47 56.88	9.055	7 38 29.5	55.05	15 54.12	64.34	0 39.44	0.801
Wed.	4	10 51 34.03	9.044	7 16 24.9	55.35	15 54.36	64.30	0 58.79	0.812
Thur.	5	10 55 10.92	9.033	6 54 13.3	55.64	15 54.61	64.27	1 18.40	0.823
Fri.	6	10 58 47.56	9.023	6 31 55.0	55.91	15 54.86	64.23	1 38.26	0.833
Sat.	7	11 2 23.96	9.014	6 9 30.4	56.17	15 55.11	64.20	1 58.35	0.842
Sun.	8	11 6 0.15	9.005	5 46 59.7	56.42	15 55.36	64.17	2 18.66	0.850
Mon.	9	11 9 36.14	8.998	5 24 23.2	56.65	15 55.61	64.15	2 39.17	0.858
Tues.	10	11 13 11.97	8.992	5 1 41.4	56.87	15 55.86	64.13	2 59.83	0.864
Wed.	11	11 16 47.66	8.986	4 38 54.5	57.07	15 56.12	64.11	3 20.64	0.870
Thur.	12	11 20 23.21	8.981	4 16 2.7	57.26	15 56.38	64.09	3 41.58	0.875
Fri.	13	11 23 58.65	8.977	3 53 6.3	57.44	15 56.64	64.08	4 2.64	0.879
Sat.	14	11 27 34.01	8.974	3 30 5.9	57.61	15 56.89	64.07	4 23.78	0.882
Sun.	15	11 31 9.32	8.972	3 7 1.9	57.76	15 57.15	64.06	4 44.96	0.884
Mon.	16	11 34 44.59	8.971	2 43 54.3	57.90	15 57.41	64.06	5 6.18	0.885
Tues.	17	11 38 19.84	8.971	2 20 43.3	58.03	15 57.67	64.06	5 27.42	0.885
Wed.	18	11 41 55.11	8.972	1 57 29.4	58.14	15 57.93	64.06	5 48.64	0.883
Thur.	19	11 45 30.43	8.974	1 34 13.1	58.24	15 58.19	64.06	6 9.82	0.881
Fri.	20	11 49 5.81	8.977	1 10 54.6	58.33	15 58.45	64.07	6 30.94	0.878
Sat.	21	11 52 41.25	8.981	0 47 34.0	58.40	15 58.71	64.08	6 51.99	0.875
Sun.	22	11 56 16.79	8.986	0 24 11.9	58.46	15 58.97	64.09	7 12.94	0.870
Mon.	23	11 59 52.44	8.991	N. 0 0 48.6	58.50	15 59.24	64.11	7 33.78	0.865
Tues.	24	12 3 28.24	8.997	S. 0 22 35.6	58.53	15 59.50	64.13	7 54.49	0.859
Wed.	25	12 7 4.20	9.004	0 46 0.4	58.55	15 59.77	64.15	8 15.03	0.852
Thur.	26	12 10 40.33	9.012	1 9 25.2	58.55	16 0.04	64.17	8 35.39	0.844
Fri.	27	12 14 16.66	9.020	1 32 49.9	58.53	16 0.31	64.20	8 55.56	0.836
Sat.	28	12 17 53.19	9.029	1 56 14.2	58.50	16 0.58	64.23	9 15.52	0.827
Sun.	29	12 21 29.94	9.039	2 19 37.6	58.46	16 0.86	64.27	9 35.27	0.818
Mon.	30	12 25 6.93	9.049	2 42 59.6	58.40	16 1.14	64.31	9 54.79	0.808
Tues.	31	12 28 44.17	9.060	S. 3 6 19.9	58.32	16 1.42	64.35	10 14.04	0.797

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	10 40 41.72	9.080	N. 8 22 16.2	54.41	0 1.61	0.776	10 40 43.33
Mon.	2	10 44 19.50	9.067	8 0 26.4	54.74	0 20.38	0.789	10 44 39.88
Tues.	3	10 47 56.98	9.055	7 38 28.9	55.05	0 39.45	0.801	10 48 36.43
Wed.	4	10 51 34.18	9.044	7 16 24.0	55.35	0 58.81	0.812	10 52 32.99
Thur.	5	10 55 11.12	9.033	6 54 12.1	55.64	1 18.42	0.823	10 56 29.54
Fri.	6	10 58 47.81	9.023	6 31 53.5	55.91	1 38.28	0.833	11 0 26.09
Sat.	7	11 2 24.26	9.014	6 9 28.6	56.17	1 58.38	0.842	11 4 22.64
Sun.	8	11 6 0.50	9.005	5 46 57.5	56.42	2 18.70	0.850	11 8 19.20
Mon.	9	11 9 36.54	8.998	5 24 20.7	56.65	2 39.21	0.858	11 12 15.75
Tues.	10	11 13 12.42	8.992	5 1 38.5	56.87	2 59.88	0.864	11 16 12.30
Wed.	11	11 16 48.16	8.986	4 38 51.3	57.07	3 20.69	0.870	11 20 8.85
Thur.	12	11 20 23.76	8.981	4 15 59.2	57.26	3 41.64	0.875	11 24 5.40
Fri.	13	11 23 59.25	8.977	3 53 2.5	57.44	4 2.70	0.879	11 28 1.95
Sat.	14	11 27 34.67	8.974	3 30 1.7	57.61	4 23.84	0.882	11 31 58.51
Sun.	15	11 31 10.03	8.972	3 6 57.3	57.76	4 45.03	0.884	11 35 55.06
Mon.	16	11 34 45.35	8.971	2 43 49.3	57.90	5 6.26	0.885	11 39 51.61
Tues.	17	11 38 20.66	8.971	2 20 38.0	58.03	5 27.50	0.885	11 43 48.16
Wed.	18	11 41 55.99	8.972	1 57 23.8	58.14	5 48.73	0.883	11 47 44.72
Thur.	19	11 45 31.36	8.974	1 34 7.1	58.24	6 9.91	0.881	11 51 41.27
Fri.	20	11 49 6.78	8.977	1 10 48.2	58.33	6 31.04	0.878	11 55 37.82
Sat.	21	11 52 42.28	8.981	0 47 27.3	58.40	6 52.09	0.875	11 59 34.37
Sun.	22	11 56 17.87	8.986	0 24 4.9	58.46	7 13.05	0.870	12 3 30.92
Mon.	23	11 59 53.58	8.991	N. 0 0 41.3	58.50	7 33.89	0.865	12 7 27.47
Tues.	24	12 3 29.43	8.997	S. 0 22 43.3	58.53	7 54.60	0.859	12 11 24.03
Wed.	25	12 7 5.44	9.004	0 46 8.4	58.55	8 15.14	0.852	12 15 20.58
Thur.	26	12 10 41.62	9.012	1 9 33.6	58.55	8 35.51	0.844	12 19 17.13
Fri.	27	12 14 18.00	9.020	1 32 58.7	58.53	8 55.68	0.836	12 23 13.68
Sat.	28	12 17 54.58	9.029	1 56 23.2	58.50	9 15.65	0.827	12 27 10.23
Sun.	29	12 21 31.38	9.039	2 19 46.9	58.46	9 35.40	0.818	12 31 6.78
Mon.	30	12 25 8.42	9.049	2 43 9.2	58.40	9 54.92	0.808	12 35 3.34
Tues.	31	12 28 45.72	9.060	S. 3 6 29.8	58.32	10 14.17	0.797	12 38 59.89

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	244	158 33 0.8	32 31.1	145.31	+0.25	0.0037873	44.3	13 17 5.73
2	245	159 31 9.4	30 39.6	145.38	0.36	.0036800	45.0	13 13 9.82
3	246	160 29 19.4	28 49.5	145.45	0.45	.0035713	45.6	13 9 13.92
4	247	161 27 31.0	27 1.0	145.52	0.50	.0034610	46.2	13 5 18.01
5	248	162 25 44.0	25 13.9	145.58	0.53	.0033493	46.7	13 1 22.10
6	249	163 23 58.5	23 28.3	145.64	0.53	.0032365	47.1	12 57 26.20
7	250	164 22 14.5	21 44.3	145.70	0.50	.0031228	47.5	12 53 30.29
8	251	165 20 32.0	20 1.7	145.76	0.45	.0030083	47.8	12 49 34.39
9	252	166 18 51.1	18 20.7	145.83	0.37	.0028932	48.0	12 45 38.49
10	253	167 17 11.8	16 41.3	145.89	0.27	.0027776	48.2	12 41 42.58
11	254	168 15 34.2	15 3.6	145.96	0.15	.0026616	48.4	12 37 46.67
12	255	169 13 58.4	13 27.8	146.03	+0.02	.0025452	48.5	12 33 50.77
13	256	170 12 24.4	11 53.7	146.11	−0.12	.0024285	48.6	12 29 54.86
14	257	171 10 52.2	10 21.4	146.19	0.25	.0023117	48.7	12 25 58.95
15	258	172 9 21.9	8 51.0	146.28	0.38	.0021947	48.8	12 22 3.05
16	259	173 7 53.6	7 22.6	146.36	0.49	.0020776	48.9	12 18 7.14
17	260	174 6 27.3	5 56.3	146.45	0.57	.0019604	48.9	12 14 11.23
18	261	175 5 3.0	4 31.9	146.54	0.62	.0018430	49.0	12 10 15.33
19	262	176 3 40.9	3 9.7	146.63	0.65	.0017252	49.1	12 6 19.42
20	263	177 2 21.1	1 49.8	146.72	0.65	.0016071	49.2	12 2 23.51
21	264	178 1 3.5	0 32.1	146.81	0.63	.0014886	49.4	11 58 27.61
22	265	178 59 48.2	59 16.8	146.91	0.58	.0013696	49.7	11 54 31.70
23	266	179 58 35.2	58 3.7	147.01	0.49	.0012499	50.0	11 50 35.79
24	267	180 57 24.5	56 52.9	147.11	0.37	.0011294	50.3	11 46 39.89
25	268	181 56 16.1	55 44.4	147.20	0.25	.0010081	50.7	11 42 43.99
26	269	182 55 9.9	54 38.1	147.29	−0.12	.0008860	51.0	11 38 48.08
27	270	183 54 5.7	53 33.9	147.37	+0.01	.0007630	51.4	11 34 52.17
28	271	184 53 3.5	52 31.6	147.46	0.13	.0006391	51.8	11 30 56.27
29	272	185 52 3.3	51 31.3	147.54	0.24	.0005143	52.2	11 27 0.36
30	273	186 51 5.2	50 33.1	147.62	0.33	.0003887	52.5	11 23 4.46
31	274	187 50 9.0	49 36.8	147.70	+0.41	0.0002624	52.8	11 19 8.55

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 40.1	15 33.3	57 23.5	−2.07	56 58.7	−2.04	2 29.7	2.01	3.0
2	15 26.7	15 20.4	56 34.5	1.98	56 11.3	1.88	3 17.6	1.98	4.0
3	15 14.5	15 9.0	55 49.4	1.75	55 29.3	1.59	4 4.9	1.96	5.0
4	15 4.0	14 59.7	55 11.2	1.42	54 55.3	1.23	4 51.9	1.96	6.0
5	14 56.0	14 53.0	54 41.8	1.03	54 30.7	0.81	5 39.0	1.97	7.0
6	14 50.7	14 49.1	54 22.2	0.60	54 16.2	−0.39	6 26.3	1.97	8.0
7	14 48.1	14 47.9	54 12.8	−0.18	54 11.9	+0.03	7 13.7	1.98	9.0
8	14 48.3	14 49.4	54 13.5	+0.23	54 17.4	0.41	8 1.2	1.97	10.0
9	14 51.0	14 54.2	54 23.4	0.59	54 31.4	0.75	8 48.5	1.97	11.0
10	14 55.9	14 59.0	54 41.3	0.89	54 52.8	1.02	9 35.5	1.95	12.0
11	15 2.6	15 6.4	55 5.7	1.12	55 19.7	1.21	10 22.2	1.94	13.0
12	15 10.5	15 14.7	55 34.6	1.27	55 50.2	1.31	11 9.8	1.94	14.0
13	15 19.0	15 23.4	56 6.2	1.34	56 22.3	1.34	11 55.5	1.95	15.0
14	15 27.8	15 32.0	56 38.4	1.33	56 54.3	1.31	12 42.7	1.98	16.0
15	15 36.3	15 40.4	57 9.7	1.27	57 24.7	1.21	13 30.8	2.03	17.0
16	15 44.3	15 48.0	57 39.0	1.16	57 52.6	1.10	14 20.3	2.10	18.0
17	15 51.5	15 54.8	58 5.4	1.04	58 17.4	0.97	15 11.8	2.19	19.0
18	15 57.8	16 0.6	58 28.6	0.90	58 38.9	0.83	16 5.4	2.28	20.0
19	16 3.2	16 5.5	58 48.4	0.75	58 57.0	0.68	17 1.2	2.36	21.0
20	16 7.6	16 9.4	59 4.7	0.60	59 11.3	0.51	17 58.6	2.41	22.0
21	16 11.0	16 12.2	59 16.9	0.42	59 21.4	0.31	18 56.6	2.42	23.0
22	16 13.0	16 13.4	59 24.4	+0.20	59 26.1	+0.07	19 54.4	2.39	24.0
23	16 13.4	16 13.0	59 26.1	−0.07	59 24.4	−0.22	20 50.9	2.32	25.0
24	16 12.0	16 10.4	59 20.7	0.30	59 15.0	0.56	21 45.6	2.24	26.0
25	16 8.3	16 5.6	59 7.2	0.74	58 57.3	0.91	22 38.3	2.16	27.0
26	16 2.3	15 58.5	58 45.3	1.08	58 31.3	1.24	23 29.3	2.09	28.0
27	15 54.2	15 49.5	58 15.6	1.38	57 58.2	1.50	☌		29.0
28	15 44.5	15 39.1	57 39.6	1.59	57 19.9	1.66	0 18.8	2.04	0.5
29	15 33.6	15 28.0	56 59.7	1.70	56 39.2	1.70	1 7.4	2.01	1.5
30	15 22.5	15 17.1	56 18.9	1.67	55 59.1	1.61	1 55.4	2.00	2.5
31	15 11.9	15 7.1	55 40.1	−1.53	55 22.5	−1.41	2 43.3	1.99	3.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 5 35.31	2.1174	S. 3 55 6.0	10.302	0	14 45 42.78	2.0662	S. 11 18 23.8	7.935
1	13 7 42.30	2.1156	4 5 23.1	10.268	1	14 47 46.74	2.0658	11 26 18.0	7.872
2	13 9 49.18	2.1138	4 15 38.2	10.234	2	14 49 50.67	2.0654	11 34 8.4	7.809
3	13 11 55.95	2.1120	4 25 51.2	10.199	3	14 51 54.58	2.0650	11 41 55.0	7.745
4	13 14 2.62	2.1103	4 36 2.1	10.163	4	14 53 58.47	2.0647	11 49 37.7	7.681
5	13 16 9.19	2.1086	4 46 10.8	10.126	5	14 56 2.34	2.0644	11 57 16.6	7.617
6	13 18 15.65	2.1069	4 56 17.2	10.089	6	14 58 6.20	2.0641	12 4 51.7	7.552
7	13 20 22.02	2.1053	5 6 21.4	10.051	7	15 0 10.04	2.0639	12 12 22.9	7.487
8	13 22 28.29	2.1037	5 16 23.3	10.012	8	15 2 13.87	2.0637	12 19 50.1	7.421
9	13 24 34.47	2.1022	5 26 22.8	9.971	9	15 4 17.69	2.0635	12 27 13.4	7.356
10	13 26 40.55	2.1007	5 36 19.8	9.930	10	15 6 21.49	2.0633	12 34 32.7	7.289
11	13 28 46.55	2.0993	5 46 14.4	9.889	11	15 8 25.28	2.0631	12 41 48.0	7.222
12	13 30 52.46	2.0978	5 56 6.6	9.847	12	15 10 29.06	2.0629	12 48 59.3	7.155
13	13 32 58.28	2.0963	6 5 56.2	9.805	13	15 12 32.83	2.0628	12 56 6.5	7.087
14	13 35 4.02	2.0950	6 15 43.2	9.762	14	15 14 36.60	2.0627	13 3 9.7	7.019
15	13 37 9.68	2.0937	6 25 27.6	9.718	15	15 16 40.36	2.0627	13 10 8.8	6.950
16	13 39 15.26	2.0924	6 35 9.4	9.673	16	15 18 44.12	2.0626	13 17 3.7	6.881
17	13 41 20.76	2.0911	6 44 48.5	9.628	17	15 20 47.87	2.0625	13 23 54.4	6.811
18	13 43 26.19	2.0898	6 54 24.8	9.582	18	15 22 51.62	2.0625	13 30 41.0	6.741
19	13 45 31.54	2.0886	7 3 58.4	9.536	19	15 24 55.37	2.0625	13 37 23.4	6.671
20	13 47 36.82	2.0874	7 13 29.1	9.489	20	15 26 59.12	2.0625	13 44 1.5	6.600
21	13 49 42.03	2.0863	7 22 57.0	9.441	21	15 29 2.86	2.0624	13 50 35.4	6.529
22	13 51 47.17	2.0852	7 32 22.0	9.392	22	15 31 6.61	2.0625	13 57 5.0	6.458
23	13 53 52.25	2.0841	S. 7 41 44.1	9.343	23	15 33 10.36	2.0625	S. 14 3 30.4	6.387
	MONDAY 2.					WEDNESDAY 4.			
0	13 55 57.26	2.0830	S. 7 51 3.2	9.293	0	15 35 14.11	2.0625	S. 14 9 51.5	6.316
1	13 58 2.21	2.0820	8 0 19.3	9.243	1	15 37 17.86	2.0625	14 16 8.3	6.244
2	14 0 7.10	2.0810	8 9 32.4	9.192	2	15 39 21.61	2.0626	14 22 20.8	6.172
3	14 2 11.93	2.0800	8 18 42.4	9.141	3	15 41 25.37	2.0627	14 28 28.9	6.099
4	14 4 16.70	2.0791	8 27 49.3	9.089	4	15 43 29.13	2.0628	14 34 32.7	6.027
5	14 6 21.42	2.0782	8 36 53.0	9.036	5	15 45 32.90	2.0629	14 40 32.1	5.954
6	14 8 26.08	2.0773	8 45 53.6	8.983	6	15 47 36.68	2.0630	14 46 27.2	5.881
7	14 10 30.69	2.0764	8 54 51.0	8.929	7	15 49 40.46	2.0631	14 52 17.9	5.807
8	14 12 35.25	2.0756	9 3 45.1	8.875	8	15 51 44.25	2.0632	14 58 4.1	5.733
9	14 14 39.76	2.0748	9 12 36.0	8.820	9	15 53 48.05	2.0634	15 3 45.9	5.658
10	14 16 44.23	2.0740	9 21 23.5	8.764	10	15 55 51.86	2.0635	15 9 23.2	5.584
11	14 18 48.65	2.0733	9 30 7.7	8.708	11	15 57 55.67	2.0637	15 14 56.0	5.509
12	14 20 53.03	2.0726	9 38 48.5	8.652	12	15 59 59.50	2.0639	15 20 24.3	5.434
13	14 22 57.37	2.0720	9 47 25.9	8.595	13	16 2 3.34	2.0641	15 25 48.1	5.358
14	14 25 1.67	2.0713	9 55 59.9	8.537	14	16 4 7.19	2.0643	15 31 7.3	5.282
15	14 27 5.93	2.0707	10 4 30.4	8.479	15	16 6 11.05	2.0645	15 36 21.9	5.206
16	14 29 10.15	2.0701	10 12 57.4	8.421	16	16 8 14.93	2.0647	15 41 32.0	5.130
17	14 31 14.34	2.0695	10 21 20.9	8.362	17	16 10 18.82	2.0649	15 46 37.5	5.053
18	14 33 18.49	2.0689	10 29 40.8	8.302	18	16 12 22.72	2.0651	15 51 38.4	4.976
19	14 35 22.61	2.0684	10 37 57.1	8.242	19	16 14 26.63	2.0653	15 56 34.7	4.899
20	14 37 26.70	2.0679	10 46 9.8	8.181	20	16 16 30.56	2.0655	16 1 26.3	4.822
21	14 39 30.76	2.0674	10 54 18.8	8.120	21	16 18 34.50	2.0658	16 6 13.3	4.745
22	14 41 34.79	2.0670	11 2 24.2	8.059	22	16 20 38.46	2.0661	16 10 55.7	4.667
23	14 43 38.80	2.0666	11 10 25.9	7.997	23	16 22 42.44	2.0664	16 15 33.3	4.589
24	14 45 42.78	2.0662	S. 11 18 23.8	7.935	24	16 24 46.43	2.0666	S. 16 20 6.3	4.511

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 24 46.43	2.0666	S.16 20 6.3	4.511
1	16 26 50.44	2.0669	16 24 34.6	4.432
2	16 28 54.46	2.0671	16 28 58.1	4.354
3	16 30 58.50	2.0674	16 33 17.0	4.275
4	16 33 2.55	2.0677	16 37 31.1	4.196
5	16 35 6.62	2.0680	16 41 40.4	4.117
6	16 37 10.71	2.0682	16 45 45.0	4.038
7	16 39 14.81	2.0685	16 49 44.8	3.958
8	16 41 18.93	2.0688	16 53 39.9	3.878
9	16 43 23.07	2.0691	16 57 30.1	3.798
10	16 45 27.22	2.0694	17 1 15.5	3.718
11	16 47 31.39	2.0697	17 4 56.1	3.637
12	16 49 35.58	2.0700	17 8 31.9	3.556
13	16 51 39.79	2.0703	17 12 2.8	3.475
14	16 53 44.01	2.0705	17 15 28.9	3.394
15	16 55 48.25	2.0708	17 18 50.1	3.313
16	16 57 52.51	2.0711	17 22 6.4	3.232
17	16 59 56.79	2.0714	17 25 17.9	3.150
18	17 2 1.08	2.0717	17 28 24.4	3.068
19	17 4 5.39	2.0720	17 31 26.0	2.986
20	17 6 9.72	2.0722	17 34 22.7	2.904
21	17 8 14.06	2.0725	17 37 14.5	2.822
22	17 10 18.42	2.0728	17 40 1.4	2.740
23	17 12 22.80	2.0731	S.17 42 43.3	2.658

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 14 27.19	2.0733	S.17 45 20.3	2.576
1	17 16 31.60	2.0736	17 47 52.3	2.493
2	17 18 36.02	2.0738	17 50 19.4	2.410
3	17 20 40.46	2.0741	17 52 41.5	2.327
4	17 22 44.91	2.0743	17 54 58.6	2.244
5	17 24 49.38	2.0746	17 57 10.8	2.161
6	17 26 53.86	2.0748	17 59 17.9	2.078
7	17 28 58.35	2.0750	18 1 20.0	1.994
8	17 31 2.86	2.0752	18 3 17.1	1.911
9	17 33 7.38	2.0754	18 5 9.2	1.827
10	17 35 11.91	2.0757	18 6 56.3	1.743
11	17 37 16.46	2.0759	18 8 38.4	1.659
12	17 39 21.02	2.0761	18 10 15.4	1.575
13	17 41 25.59	2.0763	18 11 47.4	1.491
14	17 43 30.17	2.0765	18 13 14.4	1.407
15	17 45 34.76	2.0767	18 14 36.3	1.323
16	17 47 39.37	2.0769	18 15 53.2	1.239
17	17 49 43.98	2.0770	18 17 5.0	1.155
18	17 51 48.61	2.0772	18 18 11.8	1.071
19	17 53 53.25	2.0773	18 19 13.5	0.986
20	17 55 57.89	2.0775	18 20 10.1	0.902
21	17 58 2.54	2.0776	18 21 1.6	0.817
22	18 0 7.20	2.0777	18 21 48.1	0.733
23	18 2 11.87	2.0778	18 22 29.5	0.648
24	18 4 16.54	2.0779	S.18 23 5.9	0.564

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 4 16.54	2.0779	S.18 23 5.9	0.564
1	18 6 21.22	2.0780	18 23 37.2	0.479
2	18 8 25.90	2.0781	18 24 3.4	0.394
3	18 10 30.59	2.0782	18 24 24.5	0.309
4	18 12 35.28	2.0783	18 24 40.5	0.225
5	18 14 39.97	2.0783	18 24 51.4	0.140
6	18 16 44.67	2.0784	18 24 57.3	0.056
7	18 18 49.37	2.0784	18 24 58.1	0.029
8	18 20 54.08	2.0784	18 24 53.8	0.113
9	18 22 58.78	2.0784	18 24 44.4	0.198
10	18 25 3.49	2.0784	18 24 30.0	0.283
11	18 27 8.20	2.0784	18 24 10.4	0.368
12	18 29 12.90	2.0784	18 23 45.8	0.452
13	18 31 17.60	2.0783	18 23 16.1	0.537
14	18 33 22.30	2.0783	18 22 41.3	0.622
15	18 35 27.00	2.0783	18 22 1.4	0.707
16	18 37 31.70	2.0782	18 21 16.5	0.791
17	18 39 36.39	2.0782	18 20 26.5	0.876
18	18 41 41.08	2.0781	18 19 31.4	0.960
19	18 43 45.77	2.0781	18 18 31.2	1.045
20	18 45 50.45	2.0780	18 17 26.0	1.129
21	18 47 55.12	2.0778	18 16 15.8	1.213
22	18 49 59.79	2.0777	18 15 0.5	1.297
23	18 52 4.45	2.0776	S.18 13 40.1	1.381

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 54 9.10	2.0775	S.18 12 14.6	1.465
1	18 56 13.75	2.0773	18 10 44.1	1.550
2	18 58 18.38	2.0771	18 9 8.6	1.634
3	19 0 23.00	2.0769	18 7 28.0	1.718
4	19 2 27.61	2.0768	18 5 42.4	1.802
5	19 4 32.21	2.0766	18 3 51.8	1.886
6	19 6 36.80	2.0764	18 1 56.1	1.970
7	19 8 41.38	2.0762	17 59 55.4	2.053
8	19 10 45.94	2.0760	17 57 49.7	2.137
9	19 12 50.49	2.0757	17 55 38.9	2.220
10	19 14 55.02	2.0755	17 53 23.2	2.304
11	19 16 59.54	2.0753	17 51 2.5	2.387
12	19 19 4.05	2.0750	17 48 36.8	2.470
13	19 21 8.54	2.0747	17 46 6.1	2.553
14	19 23 13.01	2.0745	17 43 30.5	2.636
15	19 25 17.47	2.0742	17 40 49.9	2.718
16	19 27 21.91	2.0739	17 38 4.3	2.801
17	19 29 26.33	2.0736	17 35 13.8	2.883
18	19 31 30.74	2.0733	17 32 18.4	2.965
19	19 33 35.13	2.0729	17 29 18.1	3.046
20	19 35 39.49	2.0726	17 26 12.9	3.128
21	19 37 43.84	2.0723	17 23 2.8	3.209
22	19 39 48.16	2.0720	17 19 47.8	3.291
23	19 41 52.47	2.0716	17 16 27.9	3.372
24	19 43 56.75	2.0712	S.17 13 3.2	3.453

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 43 56.75	2.0712	S. 17 13 3.2	3.453
1	19 46 1.01	2.0708	17 9 33.6	3.533
2	19 48 5.25	2.0704	17 5 59.2	3.614
3	19 50 9.46	2.0700	17 2 19.9	3.694
4	19 52 13.65	2.0697	16 58 35.8	3.775
5	19 54 17.82	2.0693	16 54 46.9	3.855
6	19 56 21.96	2.0689	16 50 53.2	3.935
7	19 58 26.08	2.0685	16 46 54.7	4.015
8	20 0 30.18	2.0681	16 42 51.4	4.094
9	20 2 34.25	2.0677	16 38 43.4	4.173
10	20 4 38.30	2.0673	16 34 30.6	4.252
11	20 6 42.32	2.0668	16 30 13.1	4.331
12	20 8 46.31	2.0664	16 25 50.9	4.409
13	20 10 50.28	2.0659	16 21 24.0	4.487
14	20 12 54.22	2.0655	16 16 52.4	4.565
15	20 14 58.13	2.0650	16 12 16.1	4.643
16	20 17 2.02	2.0646	16 7 35.2	4.720
17	20 19 5.88	2.0641	16 2 49.7	4.797
18	20 21 9.71	2.0637	15 57 59.6	4.874
19	20 23 13.51	2.0632	15 53 4.9	4.952
20	20 25 17.29	2.0628	15 48 5.6	5.028
21	20 27 21.04	2.0623	15 43 1.8	5.102
22	20 29 24.76	2.0618	15 37 53.4	5.177
23	20 31 28.45	2.0613	S. 15 32 40.6	5.252

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 33 32.12	2.0609	S. 15 27 23.2	5.327
1	20 35 35.76	2.0604	15 22 1.3	5.402
2	20 37 39.37	2.0599	15 16 35.0	5.476
3	20 39 42.95	2.0594	15 11 4.2	5.550
4	20 41 46.50	2.0589	15 5 29.0	5.624
5	20 43 50.02	2.0585	14 59 49.3	5.697
6	20 45 53.52	2.0580	14 54 5.3	5.770
7	20 47 56.99	2.0576	14 48 16.9	5.843
8	20 50 0.43	2.0571	14 42 24.1	5.916
9	20 52 3.84	2.0567	14 36 27.0	5.988
10	20 54 7.23	2.0562	14 30 25.6	6.060
11	20 56 10.58	2.0557	14 24 19.9	6.131
12	20 58 13.91	2.0552	14 18 9.9	6.202
13	21 0 17.21	2.0548	14 11 55.7	6.272
14	21 2 20.48	2.0544	14 5 37.3	6.342
15	21 4 23.73	2.0539	13 59 14.7	6.411
16	21 6 26.95	2.0535	13 52 48.0	6.480
17	21 8 30.15	2.0531	13 46 17.2	6.548
18	21 10 33.32	2.0526	13 39 42.2	6.616
19	21 12 36.46	2.0522	13 33 3.2	6.684
20	21 14 39.58	2.0517	13 26 20.1	6.751
21	21 16 42.67	2.0513	13 19 33.0	6.818
22	21 18 45.74	2.0509	13 12 41.9	6.885
23	21 20 48.79	2.0505	13 5 46.8	6.952
24	21 22 51.81	2.0502	S. 12 58 47.7	7.018

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 22 51.81	2.0502	S. 12 58 47.7	7.018
1	21 24 54.81	2.0498	12 51 44.7	7.083
2	21 26 57.79	2.0494	12 44 37.8	7.148
3	21 29 0.74	2.0490	12 37 27.0	7.212
4	21 31 3.67	2.0486	12 30 12.3	7.276
5	21 33 6.58	2.0483	12 22 53.8	7.339
6	21 35 9.47	2.0479	12 15 31.6	7.402
7	21 37 12.34	2.0476	12 8 5.6	7.465
8	21 39 15.18	2.0473	12 0 35.8	7.527
9	21 41 18.01	2.0470	11 53 2.3	7.588
10	21 43 20.82	2.0467	11 45 25.2	7.649
11	21 45 23.61	2.0464	11 37 44.4	7.710
12	21 47 26.39	2.0461	11 30 0.0	7.770
13	21 49 29.15	2.0459	11 22 12.0	7.829
14	21 51 31.90	2.0456	11 14 20.5	7.888
15	21 53 34.63	2.0454	11 6 25.4	7.946
16	21 55 37.35	2.0451	10 58 26.9	8.004
17	21 57 40.05	2.0449	10 50 24.9	8.061
18	21 59 42.74	2.0447	10 42 19.5	8.118
19	22 1 45.42	2.0446	10 34 10.7	8.174
20	22 3 48.09	2.0445	10 25 58.5	8.229
21	22 5 50.75	2.0443	10 17 43.0	8.284
22	22 7 53.40	2.0442	10 9 24.3	8.339
23	22 9 56.05	2.0441	S. 10 1 2.3	8.394

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 11 58.69	2.0440	S. 9 52 37.0	8.447
1	22 14 1.33	2.0439	9 44 8.6	8.500
2	22 16 3.96	2.0438	9 35 37.0	8.552
3	22 18 6.59	2.0438	9 27 2.3	8.601
4	22 20 9.21	2.0437	9 18 24.5	8.655
5	22 22 11.83	2.0437	9 9 43.7	8.706
6	22 24 14.45	2.0437	9 0 59.8	8.756
7	22 26 17.07	2.0438	8 52 13.0	8.805
8	22 28 19.70	2.0438	8 43 23.3	8.854
9	22 30 22.33	2.0438	8 34 30.6	8.903
10	22 32 24.96	2.0439	8 25 35.1	8.949
11	22 34 27.60	2.0441	8 16 36.8	8.996
12	22 36 30.25	2.0442	8 7 35.7	9.041
13	22 38 32.91	2.0443	7 58 31.9	9.087
14	22 40 35.57	2.0445	7 49 25.3	9.132
15	22 42 38.24	2.0447	7 40 16.1	9.176
16	22 44 40.93	2.0449	7 31 4.2	9.219
17	22 46 43.63	2.0452	7 21 49.8	9.262
18	22 48 46.35	2.0454	7 12 32.8	9.304
19	22 50 49.08	2.0457	7 3 13.3	9.345
20	22 52 51.83	2.0460	6 53 51.4	9.386
21	22 54 54.60	2.0463	6 44 27.0	9.426
22	22 56 57.39	2.0467	6 35 0.3	9.466
23	22 59 0.20	2.0471	6 25 31.2	9.504
24	23 1 3.04	2.0475	S. 6 15 59.8	9.542

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 1 3.04	2.0476	S. 6 15 59.8	9.542
1	23 3 5.90	2.0479	6 6 26.2	9.579
2	23 5 8.79	2.0483	5 56 50.3	9.616
3	23 7 11.70	2.0488	5 47 12.3	9.652
4	23 9 14.65	2.0493	5 37 32.1	9.687
5	23 11 17.63	2.0499	5 27 49.8	9.722
6	23 13 20.64	2.0504	5 18 5.5	9.756
7	23 15 23.68	2.0510	5 8 19.2	9.788
8	23 17 26.76	2.0516	4 58 31.0	9.820
9	23 19 29.87	2.0523	4 48 40.8	9.852
10	23 21 33.03	2.0530	4 38 48.8	9.882
11	23 23 36.23	2.0537	4 28 55.0	9.912
12	23 25 39.47	2.0544	4 18 59.4	9.941
13	23 27 42.75	2.0551	4 9 2.0	9.969
14	23 29 46.08	2.0559	3 59 3.0	9.996
15	23 31 49.46	2.0566	3 49 2.4	10.023
16	23 33 52.89	2.0576	3 39 0.2	10.049
17	23 35 56.37	2.0584	3 28 56.5	10.074
18	23 37 59.90	2.0593	3 18 51.3	10.098
19	23 40 3.49	2.0603	3 8 44.7	10.122
20	23 42 7.13	2.0613	2 58 36.7	10.145
21	23 44 10.83	2.0623	2 48 27.3	10.167
22	23 46 14.60	2.0633	2 38 16.7	10.188
23	23 48 18.42	2.0643	S. 2 28 4.8	10.208

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 50 22.31	2.0653	S. 2 17 51.8	10.227
1	23 52 26.26	2.0664	2 7 37.6	10.246
2	23 54 30.28	2.0676	1 57 22.3	10.264
3	23 56 34.37	2.0688	1 47 5.9	10.281
4	23 58 38.53	2.0700	1 36 48.5	10.297
5	0 0 42.77	2.0713	1 26 30.2	10.313
6	0 2 47.08	2.0725	1 16 10.9	10.328
7	0 4 51.47	2.0738	1 5 50.8	10.342
8	0 6 55.93	2.0751	0 55 29.9	10.355
9	0 9 0.48	2.0765	0 45 8.2	10.367
10	0 11 5.11	2.0779	0 34 45.9	10.377
11	0 13 9.82	2.0793	0 24 22.9	10.387
12	0 15 14.62	2.0808	0 13 59.4	10.396
13	0 17 19.51	2.0823	S. 0 3 35.3	10.406
14	0 19 24.49	2.0838	N. 0 6 49.2	10.413
15	0 21 29.56	2.0853	0 17 14.2	10.419
16	0 23 34.73	2.0869	0 27 39.5	10.425
17	0 25 39.99	2.0886	0 38 5.2	10.430
18	0 27 45.35	2.0902	0 48 31.1	10.434
19	0 29 50.81	2.0919	0 58 57.2	10.436
20	0 31 56.38	2.0936	1 9 23.4	10.438
21	0 34 2.05	2.0953	1 19 49.7	10.439
22	0 36 7.82	2.0971	1 30 16.1	10.439
23	0 38 13.70	2.0990	1 40 42.5	10.439
24	0 40 19.70	2.1008	N. 1 51 8.8	10.438

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 40 19.70	2.1008	N. 1 51 8.8	10.438
1	0 42 25.80	2.1027	2 1 35.0	10.435
2	0 44 32.02	2.1046	2 12 1.0	10.432
3	0 46 38.36	2.1066	2 22 26.8	10.428
4	0 48 44.81	2.1086	2 32 52.3	10.423
5	0 50 51.38	2.1106	2 43 17.5	10.416
6	0 52 58.08	2.1126	2 53 42.2	10.408
7	0 55 4.90	2.1147	3 4 6.5	10.400
8	0 57 11.84	2.1168	3 14 30.2	10.391
9	0 59 18.91	2.1190	3 24 53.4	10.381
10	1 1 26.12	2.1211	3 35 15.9	10.370
11	1 3 33.45	2.1233	3 45 37.8	10.358
12	1 5 40.92	2.1256	3 55 58.9	10.346
13	1 7 48.52	2.1278	4 6 19.2	10.332
14	1 9 56.26	2.1301	4 16 38.7	10.317
15	1 12 4.14	2.1325	4 26 57.2	10.300
16	1 14 12.16	2.1349	4 37 14.7	10.283
17	1 16 20.32	2.1373	4 47 31.2	10.266
18	1 18 28.63	2.1397	4 57 46.6	10.248
19	1 20 37.09	2.1422	5 8 0.8	10.227
20	1 22 45.69	2.1447	5 18 13.8	10.206
21	1 24 54.44	2.1472	5 28 25.5	10.184
22	1 27 3.35	2.1497	5 38 35.9	10.161
23	1 29 12.41	2.1523	N. 5 48 44.9	10.138

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 31 21.63	2.1549	N. 5 58 52.5	10.114
1	1 33 31.00	2.1576	6 8 58.5	10.088
2	1 35 40.54	2.1603	6 19 3.0	10.061
3	1 37 50.24	2.1630	6 29 5.8	10.033
4	1 40 0.10	2.1657	6 39 6.9	10.004
5	1 42 10.13	2.1685	6 49 6.2	9.973
6	1 44 20.32	2.1713	6 59 3.7	9.942
7	1 46 30.68	2.1741	7 8 59.3	9.910
8	1 48 41.21	2.1769	7 18 53.0	9.877
9	1 50 51.91	2.1798	7 28 44.7	9.844
10	1 53 2.78	2.1827	7 38 34.3	9.809
11	1 55 13.83	2.1856	7 48 21.8	9.773
12	1 57 25.05	2.1885	7 58 7.0	9.736
13	1 59 36.45	2.1915	8 7 50.0	9.699
14	2 1 48.03	2.1945	8 17 30.7	9.660
15	2 3 59.79	2.1976	8 27 9.1	9.618
16	2 6 11.74	2.2006	8 36 45.0	9.577
17	2 8 23.87	2.2037	8 46 18.4	9.536
18	2 10 36.18	2.2067	8 55 49.2	9.493
19	2 12 48.68	2.2098	9 5 17.4	9.448
20	2 15 1.36	2.2130	9 14 42.9	9.403
21	2 17 14.23	2.2162	9 24 5.7	9.356
22	2 19 27.30	2.2194	9 33 25.6	9.309
23	2 21 40.55	2.2226	9 42 42.7	9.260
24	2 23 54.00	2.2257	N. 9 51 56.9	9.210

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 23 54.00	2.2257	N. 9 51 56.9	9.210
1	2 26 7.64	2.2289	10 1 8.0	9.160
2	2 28 21.47	2.2322	10 10 16.1	9.109
3	2 30 35.50	2.2355	10 19 21.1	9.056
4	2 32 49.73	2.2388	10 28 22.9	9.003
5	2 35 4.16	2.2421	10 37 21.4	8.948
6	2 37 18.78	2.2454	10 46 16.7	8.893
7	2 39 33.60	2.2487	10 55 8.6	8.837
8	2 41 48.62	2.2520	11 3 57.1	8.779
9	2 44 3.84	2.2554	11 12 42.1	8.720
10	2 46 19.27	2.2588	11 21 23.5	8.660
11	2 48 34.90	2.2622	11 30 1.3	8.599
12	2 50 50.74	2.2656	11 38 35.4	8.537
13	2 53 6.78	2.2690	11 47 5.8	8.475
14	2 55 23.02	2.2724	11 55 32.4	8.411
15	2 57 39.47	2.2758	12 3 55.1	8.346
16	2 59 56.12	2.2793	12 12 13.9	8.280
17	3 2 12.98	2.2828	12 20 28.7	8.213
18	3 4 30.05	2.2862	12 28 39.5	8.145
19	3 6 47.32	2.2896	12 36 46.2	8.077
20	3 9 4.80	2.2930	12 44 48.7	8.007
21	3 11 22.49	2.2965	12 52 47.0	7.936
22	3 13 40.38	2.2999	13 0 41.0	7.864
23	3 15 58.48	2.3034	N.13 8 30.7	7.792

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 18 16.79	2.3068	N.13 16 16.0	7.718
1	3 20 35.31	2.3103	13 23 56.8	7.643
2	3 22 54.03	2.3138	13 31 33.1	7.567
3	3 25 12.96	2.3173	13 39 4.8	7.490
4	3 27 32.10	2.3207	13 46 31.9	7.412
5	3 29 51.44	2.3241	13 53 54.3	7.333
6	3 32 10.99	2.3275	14 1 11.9	7.253
7	3 34 30.75	2.3310	14 8 24.7	7.173
8	3 36 50.71	2.3344	14 15 32.7	7.092
9	3 39 10.88	2.3378	14 22 35.7	7.009
10	3 41 31.25	2.3412	14 29 33.7	6.925
11	3 43 51.83	2.3447	14 36 26.7	6.841
12	3 46 12.61	2.3481	14 43 14.6	6.755
13	3 48 33.59	2.3514	14 49 57.3	6.668
14	3 50 54.78	2.3548	14 56 34.8	6.581
15	3 53 16.17	2.3582	15 3 7.1	6.493
16	3 55 37.76	2.3615	15 9 34.0	6.404
17	3 57 59.55	2.3648	15 15 55.6	6.314
18	4 0 21.53	2.3681	15 22 11.7	6.223
19	4 2 43.71	2.3713	15 28 22.4	6.132
20	4 5 6.09	2.3746	15 34 27.5	6.040
21	4 7 28.66	2.3778	15 40 27.1	5.946
22	4 9 51.43	2.3810	15 46 21.0	5.851
23	4 12 14.38	2.3842	15 52 9.2	5.756
24	4 14 37.53	2.3874	N.15 57 51.7	5.660

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 14 37.53	2.3874	N.15 57 51.7	5.660
1	4 17 0.87	2.3905	16 3 28.4	5.563
2	4 19 24.39	2.3936	16 8 59.3	5.465
3	4 21 48.10	2.3967	16 14 24.3	5.367
4	4 24 11.99	2.3998	16 19 43.3	5.268
5	4 26 36.06	2.4028	16 24 56.4	5.168
6	4 29 0.32	2.4058	16 30 3.4	5.067
7	4 31 24.75	2.4087	16 35 4.3	4.966
8	4 33 49.36	2.4116	16 39 59.1	4.863
9	4 36 14.14	2.4145	16 44 47.7	4.760
10	4 38 39.10	2.4173	16 49 30.1	4.654
11	4 41 4.22	2.4201	16 54 6.2	4.549
12	4 43 29.51	2.4229	16 58 36.1	4.444
13	4 45 54.96	2.4256	17 2 59.6	4.338
14	4 48 20.58	2.4283	17 7 16.7	4.232
15	4 50 46.36	2.4310	17 11 27.4	4.125
16	4 53 12.30	2.4336	17 15 31.7	4.017
17	4 55 38.39	2.4362	17 19 29.5	3.908
18	4 58 4.64	2.4387	17 23 20.7	3.798
19	5 0 31.03	2.4411	17 27 5.3	3.688
20	5 2 57.57	2.4435	17 30 43.3	3.578
21	5 5 24.25	2.4459	17 34 14.6	3.467
22	5 7 51.08	2.4483	17 37 39.3	3.356
23	5 10 18.05	2.4506	N.17 40 57.3	3.243

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 12 45.15	2.4528	N.17 44 8.5	3.130
1	5 15 12.38	2.4549	17 47 12.9	3.017
2	5 17 39.74	2.4571	17 50 10.5	2.903
3	5 20 7.23	2.4592	17 53 1.2	2.788
4	5 22 34.84	2.4612	17 55 45.0	2.673
5	5 25 2.57	2.4631	17 58 21.9	2.558
6	5 27 30.41	2.4650	18 0 51.9	2.442
7	5 29 58.39	2.4669	18 3 14.9	2.326
8	5 32 26.44	2.4687	18 5 30.8	2.209
9	5 34 54.61	2.4704	18 7 39.8	2.091
10	5 37 22.89	2.4721	18 9 41.7	1.972
11	5 39 51.27	2.4738	18 11 36.5	1.854
12	5 42 19.74	2.4753	18 13 24.2	1.736
13	5 44 48.30	2.4768	18 15 4.8	1.618
14	5 47 16.95	2.4782	18 16 38.3	1.499
15	5 49 45.68	2.4796	18 18 4.6	1.379
16	5 52 14.50	2.4809	18 19 23.8	1.260
17	5 54 43.39	2.4822	18 20 35.8	1.140
18	5 57 12.36	2.4833	18 21 40.6	1.019
19	5 59 41.39	2.4844	18 22 38.1	0.898
20	6 2 10.49	2.4855	18 23 28.4	0.777
21	6 4 39.65	2.4865	18 24 11.4	0.657
22	6 7 8.87	2.4874	18 24 47.2	0.536
23	6 9 38.14	2.4883	18 25 15.7	0.415
24	6 12 7.46	2.4891	N.18 25 37.0	0.294

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 12 7.46	2.4891	N.18 25 37.0	0.294
1	6 14 36.82	2.4898	18 25 51.1	0.172
2	6 17 16.23	2.4905	18 25 57.7	0.050
3	6 19 35.68	2.4911	18 25 57.0	0.073
4	6 22 5.16	2.4916	18 25 49.0	0.195
5	6 24 34.67	2.4920	18 25 33.7	0.316
6	6 27 4.20	2.4924	18 25 11.1	0.438
7	6 29 33.76	2.4928	18 24 41.2	0.560
8	6 32 3.33	2.4930	18 24 3.9	0.682
9	6 34 32.91	2.4931	18 23 19.3	0.804
10	6 37 2.50	2.4932	18 22 27.4	0.926
11	6 39 32.10	2.4933	18 21 28.2	1.048
12	6 42 1.70	2.4933	18 20 21.6	1.170
13	6 44 31.30	2.4933	18 19 7.7	1.292
14	6 47 0.89	2.4931	18 17 46.6	1.413
15	6 49 30.47	2.4928	18 16 18.2	1.534
16	6 52 0.03	2.4925	18 14 42.5	1.655
17	6 54 29.57	2.4922	18 12 59.5	1.776
18	6 56 59.09	2.4918	18 11 9.3	1.897
19	6 59 28.58	2.4913	18 9 11.8	2.018
20	7 1 58.04	2.4907	18 7 7.1	2.139
21	7 4 27.46	2.4901	18 4 55.1	2.259
22	7 6 56.85	2.4894	18 2 36.0	2.379
23	7 9 26.19	2.4887	N.18 0 9.7	2.498

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 11 55.49	2.4879	N.17 57 36.2	2.618
1	7 14 24.74	2.4870	17 54 55.5	2.737
2	7 16 53.93	2.4861	17 52 7.7	2.856
3	7 19 23.07	2.4851	17 49 12.8	2.974
4	7 21 52.14	2.4840	17 46 10.8	3.092
5	7 24 21.15	2.4828	17 43 1.7	3.210
6	7 26 50.08	2.4816	17 39 45.6	3.327
7	7 29 18.94	2.4804	17 36 22.4	3.444
8	7 31 47.73	2.4791	17 32 52.3	3.561
9	7 34 16.44	2.4778	17 29 15.2	3.677
10	7 36 45.06	2.4763	17 25 31.1	3.792
11	7 39 13.60	2.4748	17 21 40.1	3.907
12	7 41 42.04	2.4733	17 17 42.3	4.021
13	7 44 10.39	2.4717	17 13 37.6	4.135
14	7 46 38.64	2.4700	17 9 26.1	4.248
15	7 49 6.79	2.4683	17 5 7.9	4.360
16	7 51 34.84	2.4666	17 0 42.9	4.472
17	7 54 2.78	2.4648	16 56 11.2	4.584
18	7 56 30.61	2.4629	16 51 32.8	4.695
19	7 58 58.33	2.4610	16 46 47.8	4.805
20	8 1 25.93	2.4590	16 41 56.2	4.914
21	8 3 53.41	2.4570	16 36 58.1	5.023
22	8 6 20.77	2.4550	16 31 53.4	5.131
23	8 8 48.01	2.4529	16 26 42.3	5.239
24	8 11 15.12	2.4507	N.16 21 24.7	5.346

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 11 15.12	2.4507	N.16 21 24.7	5.346
1	8 13 42.10	2.4485	16 16 0.7	5.452
2	8 16 8.94	2.4463	16 10 30.4	5.557
3	8 18 35.65	2.4440	16 4 53.8	5.662
4	8 21 2.22	2.4417	15 59 11.0	5.766
5	8 23 28.65	2.4393	15 53 21.9	5.869
6	8 25 54.94	2.4369	15 47 26.7	5.971
7	8 28 21.08	2.4344	15 41 25.4	6.072
8	8 30 47.07	2.4319	15 35 18.0	6.172
9	8 33 12.91	2.4294	15 29 4.6	6.272
10	8 35 38.60	2.4269	15 22 45.3	6.371
11	8 38 4.13	2.4243	15 16 20.1	6.469
12	8 40 29.51	2.4217	15 9 49.0	6.566
13	8 42 54.73	2.4190	15 3 12.1	6.662
14	8 45 19.79	2.4163	14 56 29.5	6.758
15	8 47 44.69	2.4136	14 49 41.2	6.853
16	8 50 9.42	2.4109	14 42 47.2	6.946
17	8 52 33.99	2.4081	14 35 47.7	7.038
18	8 54 58.39	2.4053	14 28 42.6	7.129
19	8 57 22.62	2.4024	14 21 32.1	7.220
20	8 59 46.68	2.3996	14 14 16.2	7.310
21	9 2 10.57	2.3968	14 6 54.9	7.398
22	9 4 34.29	2.3939	13 59 28.4	7.485
23	9 6 57.83	2.3909	N.13 51 56.6	7.572

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 9 21.20	2.3880	N.13 44 19.7	7.658
1	9 11 44.39	2.3850	13 36 37.7	7.743
2	9 14 7.40	2.3821	13 28 50.6	7.827
3	9 16 30.24	2.3791	13 20 58.5	7.909
4	9 18 52.89	2.3761	13 13 1.5	7.990
5	9 21 15.36	2.3730	13 4 59.7	8.071
6	9 23 37.65	2.3700	12 56 53.0	8.151
7	9 25 59.76	2.3669	12 48 41.6	8.229
8	9 28 21.68	2.3639	12 40 25.5	8.306
9	9 30 43.42	2.3608	12 32 4.8	8.383
10	9 33 4.97	2.3578	12 23 39.6	8.458
11	9 35 26.34	2.3547	12 15 9.9	8.532
12	9 37 47.53	2.3516	12 6 35.8	8.605
13	9 40 8.53	2.3484	11 57 57.4	8.676
14	9 42 29.34	2.3453	11 49 14.8	8.746
15	9 44 49.97	2.3423	11 40 27.9	8.816
16	9 47 10.41	2.3392	11 31 36.9	8.884
17	9 49 30.66	2.3360	11 22 41.9	8.951
18	9 51 50.73	2.3329	11 13 42.8	9.017
19	9 54 10.61	2.3298	11 4 39.8	9.082
20	9 56 30.30	2.3266	10 55 32.9	9.146
21	9 58 49.80	2.3235	10 46 22.3	9.208
22	10 1 9.12	2.3204	10 37 7.9	9.269
23	10 3 28.25	2.3173	10 27 49.9	9.330
24	10 5 47.20	2.3142	N.10 18 28.3	9.389

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 5 47.20	2.3142	N. 10 18 28.3	9.389
1	10 8 5.96	2.3111	10 9 3.3	9.447
2	10 10 24.53	2.3080	9 59 34.8	9.504
3	10 12 42.92	2.3049	9 50 2.9	9.559
4	10 15 1.12	2.3018	9 40 27.7	9.614
5	10 17 19.14	2.2988	9 30 49.2	9.668
6	10 19 36.97	2.2957	9 21 7.6	9.720
7	10 21 54.62	2.2926	9 11 22.9	9.771
8	10 24 12.08	2.2896	9 1 35.1	9.821
9	10 26 29.36	2.2866	8 51 44.4	9.869
10	10 28 46.46	2.2836	8 41 50.8	9.916
11	10 31 3.38	2.2805	8 31 54.3	9.963
12	10 33 20.12	2.2775	8 21 55.0	10.008
13	10 35 36.68	2.2745	8 11 53.2	10.052
14	10 37 53.06	2.2715	8 1 48.8	10.095
15	10 40 9.26	2.2686	7 51 41.9	10.136
16	10 42 25.29	2.2657	7 41 32.5	10.176
17	10 44 41.14	2.2628	7 31 20.8	10.215
18	10 46 56.82	2.2598	7 21 6.7	10.253
19	10 49 12.32	2.2569	7 10 50.4	10.289
20	10 51 27.65	2.2540	7 0 32.0	10.324
21	10 53 42.81	2.2512	6 50 11.5	10.359
22	10 55 57.79	2.2484	6 39 48.9	10.392
23	10 58 12.61	2.2456	N. 6 29 24.4	10.423

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 0 27.26	2.2428	N. 6 18 58.0	10.454
1	11 2 41.74	2.2400	6 8 29.8	10.485
2	11 4 56.06	2.2372	5 57 59.8	10.514
3	11 7 10.21	2.2345	5 47 28.2	10.541
4	11 9 24.20	2.2318	5 36 54.9	10.567
5	11 11 38.03	2.2291	5 26 20.1	10.593
6	11 13 51.69	2.2264	5 15 43.8	10.617
7	11 16 5.20	2.2238	5 5 6.2	10.639
8	11 18 18.55	2.2212	4 54 27.2	10.660
9	11 20 31.74	2.2186	4 43 46.9	10.681
10	11 22 44.78	2.2160	4 33 5.5	10.700
11	11 24 57.67	2.2135	4 22 23.0	10.718
12	11 27 10.40	2.2110	4 11 39.4	10.735
13	11 29 22.98	2.2085	4 0 54.9	10.750
14	11 31 35.42	2.2060	3 50 9.4	10.764
15	11 33 47.71	2.2036	3 39 23.1	10.778
16	11 35 59.85	2.2012	3 28 36.0	10.790
17	11 38 11.85	2.1988	3 17 48.3	10.801
18	11 40 23.70	2.1964	3 6 59.9	10.811
19	11 42 35.42	2.1941	2 56 10.9	10.820
20	11 44 46.99	2.1917	2 45 21.5	10.828
21	11 46 58.42	2.1894	2 34 31.6	10.834
22	11 49 9.72	2.1872	2 23 41.4	10.839
23	11 51 20.89	2.1850	2 12 50.9	10.844
24	11 53 31.92	2.1828	N. 2 2 0.1	10.848

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 53 31.92	2.1828	N. 2 2 0.1	10.848
1	11 55 42.82	2.1806	1 51 9.1	10.850
2	11 57 53.59	2.1784	1 40 18.1	10.851
3	12 0 4.23	2.1763	1 29 27.0	10.851
4	12 2 14.75	2.1742	1 18 36.0	10.850
5	12 4 25.14	2.1722	1 7 45.0	10.848
6	12 6 35.41	2.1702	0 56 54.2	10.845
7	12 8 45.56	2.1682	0 46 3.6	10.841
8	12 10 55.59	2.1662	0 35 13.3	10.836
9	12 13 5.50	2.1643	0 24 23.3	10.829
10	12 15 15.30	2.1624	0 13 33.8	10.822
11	12 17 24.99	2.1605	N. 0 2 44.7	10.814
12	12 19 34.56	2.1586	S. 0 8 3.9	10.805
13	12 21 44.02	2.1568	0 18 51.9	10.794
14	12 23 53.38	2.1550	0 29 39.2	10.782
15	12 26 2.63	2.1533	0 40 25.8	10.770
16	12 28 11.77	2.1515	0 51 11.6	10.757
17	12 30 20.81	2.1498	1 1 56.6	10.743
18	12 32 29.75	2.1481	1 12 40.7	10.728
19	12 34 38.58	2.1464	1 23 23.8	10.710
20	12 36 47.32	2.1448	1 34 5.9	10.692
21	12 38 55.96	2.1432	1 44 46.9	10.674
22	12 41 4.51	2.1417	1 55 26.8	10.654
23	12 43 12.96	2.1401	S. 2 6 5.5	10.634

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 45 21.32	2.1386	S. 2 16 42.9	10.613
1	12 47 29.59	2.1371	2 27 19.0	10.591
2	12 49 37.77	2.1357	2 37 53.8	10.568
3	12 51 45.87	2.1342	2 48 27.1	10.543
4	12 53 53.88	2.1329	2 58 59.0	10.518
5	12 56 1.81	2.1315	3 9 29.3	10.492
6	12 58 9.66	2.1301	3 19 58.1	10.466
7	13 0 17.43	2.1288	3 30 25.2	10.438
8	13 2 25.12	2.1275	3 40 50.7	10.409
9	13 4 32.74	2.1263	3 51 14.4	10.380
10	13 6 40.28	2.1250	4 1 36.3	10.350
11	13 8 47.75	2.1238	4 11 56.4	10.319
12	13 10 55.14	2.1226	4 22 14.6	10.287
13	13 13 2.46	2.1215	4 32 30.8	10.253
14	13 15 9.72	2.1204	4 42 45.0	10.219
15	13 17 16.91	2.1193	4 52 57.1	10.185
16	13 19 24.04	2.1183	5 3 7.2	10.150
17	13 21 31.11	2.1173	5 13 15.1	10.113
18	13 23 38.11	2.1162	5 23 20.8	10.076
19	13 25 45.05	2.1152	5 33 24.2	10.038
20	13 27 51.93	2.1142	5 43 25.3	9.999
21	13 29 58.75	2.1133	5 53 24.0	9.959
22	13 32 5.52	2.1124	6 3 20.4	9.918
23	13 34 12.24	2.1115	6 13 14.2	9.877
24	13 36 18.90	2.1106	S. 6 23 5.6	9.836

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 36 18.90	2.1106	S. 6 23 5.6	9.835
1	13 38 25.51	2.1098	6 32 54.5	9.793
2	13 40 32.07	2.1090	6 42 40.8	9.750
3	13 42 38.58	2.1082	6 52 24.4	9.706
4	13 44 45.05	2.1074	7 2 5.4	9.660
5	13 46 51.47	2.1067	7 11 43.6	9.614
6	13 48 57.85	2.1059	7 21 19.1	9.568
7	13 51 4.18	2.1052	7 30 51.8	9.521
8	13 53 10.47	2.1045	7 40 21.6	9.473
9	13 55 16.72	2.1038	7 49 48.5	9.424
10	13 57 22.93	2.1031	7 59 12.5	9.374
11	13 59 29.10	2.1025	8 8 33.5	9.324
12	14 1 35.23	2.1019	8 17 51.4	9.274
13	14 3 41.33	2.1013	8 27 6.3	9.223
14	14 5 47.39	2.1008	8 36 18.1	9.171
15	14 7 53.42	2.1003	8 45 26.7	9.118
16	14 9 59.42	2.0998	8 54 32.2	9.064
17	14 12 5.39	2.0993	9 3 34.4	9.010
18	14 14 11.33	2.0988	9 12 33.4	8.955
19	14 16 17.24	2.0983	9 21 29.1	8.900
20	14 18 23.12	2.0978	9 30 21.5	8.844
21	14 20 28.98	2.0974	9 39 10.5	8.788
22	14 22 34.81	2.0970	9 47 56.1	8.731
23	14 24 40.62	2.0966	9 56 38.3	8.674
24	14 26 46.40	2.0962	S. 10 5 17.0	8.616

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 26 46.40	2.0962	S. 10 5 17.0	8.616
1	14 28 52.17	2.0959	10 13 52.2	8.557
2	14 30 57.91	2.0955	10 22 23.8	8.497
3	14 33 3.63	2.0952	10 30 51.8	8.437
4	14 35 9.33	2.0949	10 39 16.2	8.376
5	14 37 15.01	2.0946	10 47 36.9	8.314
6	14 39 20.68	2.0943	10 55 53.9	8.252
7	14 41 26.33	2.0940	11 4 7.2	8.190
8	14 43 31.96	2.0938	11 12 16.7	8.127
9	14 45 37.58	2.0936	11 20 22.4	8.063
10	14 47 43.19	2.0933	11 28 24.3	8.000
11	14 49 48.78	2.0931	11 36 22.4	7.936
12	14 51 54.36	2.0929	11 44 16.7	7.871
13	14 53 59.93	2.0927	11 52 7.0	7.805
14	14 56 5.49	2.0925	11 59 53.3	7.739
15	14 58 11.04	2.0923	12 7 35.7	7.673
16	15 0 16.57	2.0922	12 15 14.1	7.606
17	15 2 22.10	2.0921	12 22 48.5	7.539
18	15 4 27.62	2.0919	12 30 18.8	7.471
19	15 6 33.13	2.0918	12 37 45.1	7.403
20	15 8 38.64	2.0917	12 45 7.2	7.334
21	15 10 44.14	2.0916	12 52 25.2	7.265
22	15 12 49.63	2.0915	12 59 39.0	7.196
23	15 14 55.12	2.0914	13 6 48.7	7.126
24	15 17 0.60	2.0913	S. 13 13 54.1	7.056

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	5	11	31.1
○ Full Moon, ...	13	12	33.2
☾ Last Quarter, ...	20	15	5.0
● New Moon, ...	27	11	42.0

	d	h
☾ Apogee, ...	7	10.4
☾ Perigee, ...	22	18.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	38° 9′ 29″	2891	39° 41′ 59″	2909	41° 14′ 7″	2927	42° 45′ 52″	2945
	Saturn	E.	32 9 37	2601	30 30 44	2621	28 52 17	2640	27 14 16	2660
	Antares	E.	51 47 14	2670	50 9 54	2692	48 33 3	2715	46 56 43	2738
	a Aquilæ	E.	100 8 46	3023	98 39 2	3036	97 9 34	3049	95 40 22	3064
2	SUN	W.	50 18 59	3033	51 48 31	3051	53 17 41	3068	54 46 30	3086
	Antares	E.	39 2 59	2866	37 29 56	2895	35 57 31	2925	34 25 44	2966
	a Aquilæ	E.	88 18 58	3143	86 51 41	3160	85 24 44	3178	83 58 9	3197
3	SUN	W.	62 5 30	3166	63 32 20	3182	64 58 51	3197	66 25 4	3212
	Mars	W.	27 45 40	3065	29 14 33	3078	30 43 8	3092	32 11 27	3106
	Spica	W.	21 29 40	2949	23 0 57	2949	24 32 14	2950	26 3 30	2952
	a Aquilæ	E.	76 50 52	3295	75 26 35	3317	74 2 43	3338	72 39 16	3360
	Jupiter	E.	109 3 21	2779	107 28 25	2792	105 53 47	2806	104 19 28	2820
	Fomalhaut	E.	109 48 55	3195	108 22 40	3203	106 56 34	3210	105 30 37	3216
4	SUN	W.	73 31 56	3279	74 56 32	3292	76 20 53	3304	77 45 0	3315
	Mars	W.	39 29 3	3169	40 55 49	3180	42 22 22	3192	43 48 41	3203
	Spica	W.	33 38 34	2981	35 9 11	2988	36 39 39	2995	38 9 58	3002
	a Aquilæ	E.	65 48 25	3479	64 27 37	3505	63 7 18	3531	61 47 28	3558
	Jupiter	E.	96 32 1	2883	94 59 18	2893	93 26 50	2904	91 54 36	2914
	Fomalhaut	E.	98 23 20	3262	96 58 24	3271	95 33 39	3281	94 9 5	3290
5	SUN	W.	84 42 28	3365	86 5 24	3374	87 28 10	3383	88 50 46	3390
	Mars	W.	50 57 12	3251	52 22 21	3259	53 47 21	3266	55 12 11	3274
	Spica	W.	45 39 20	3037	47 8 47	3043	48 38 6	3049	50 7 18	3055
	Saturn	W.	18 17 38	3073	19 46 21	3076	21 15 0	3078	22 43 37	3081
	a Aquilæ	E	55 16 12	3714	53 59 40	3749	52 43 45	3788	51 28 30	3827
	Jupiter	E.	84 16 37	2961	82 45 35	2969	81 14 43	2976	79 44 0	2983
	Fomalhaut	E.	87 8 55	3336	85 45 25	3345	84 22 6	3355	82 58 58	3364
	a Pegasi	E.	101 51 9	3283	100 26 38	3288	99 2 13	3294	97 37 54	3298
6	SUN	W.	95 41 51	3421	97 3 44	3424	98 25 33	3429	99 47 17	3431
	Mars	W.	62 14 28	3303	63 38 36	3307	65 2 39	3311	66 26 37	3314
	Spica	W.	57 31 43	3078	59 0 20	3080	60 28 54	3063	61 57 24	3066
	Saturn	W.	30 5 44	3096	31 33 58	3099	33 2 9	3101	34 30 18	3104
	a Aquilæ	E.	45 23 20	4071	44 12 50	4132	43 3 19	4197	41 54 50	4268
	Jupiter	E.	72 12 25	3011	70 42 26	3015	69 12 32	3019	67 42 43	3022
	Fomalhaut	E.	76 5 53	3409	74 43 47	3418	73 21 51	3428	72 0 6	3436
	a Pegasi	E.	90 37 42	3322	89 13 56	3326	87 50 15	3331	86 26 39	3334
7	SUN	W.	106 35 11	3442	107 56 40	3442	109 18 9	3442	110 39 38	3441
	Mars	W.	73 25 44	3324	74 49 28	3324	76 13 11	3324	77 36 54	3324
	Spica	W.	69 19 18	3091	70 47 38	3092	72 15 57	3091	73 44 17	3091
	Saturn	W.	41 50 27	3106	43 18 27	3109	44 46 26	3107	46 14 27	3107
	Antares	W.	25 0 5	3435	26 21 42	3400	27 43 58	3371	29 6 48	3343
	Jupiter	E.	60 14 27	3032	58 44 54	3033	57 15 22	3032	55 45 49	3032
	Fomalhaut	E.	65 14 5	3486	63 53 27	3498	62 33 1	3510	61 12 48	3523
	a Pegasi	E.	79 29 44	3353	78 6 34	3356	76 43 27	3359	75 20 24	3363
8	SUN	W.	117 27 24	3431	118 49 5	3428	120 10 50	3423	121 32 40	3420
	Mars	W.	84 35 52	3318	85 59 48	3311	87 23 47	3307	88 47 50	3303
	Spica	W.	81 6 20	3080	82 34 54	3078	84 3 31	3073	85 32 13	3069
	Saturn	W.	53 34 56	3096	55 3 11	3093	56 31 29	3088	57 59 53	3084
	Antares	W.	36 7 51	3244	37 33 8	3229	38 58 43	3215	40 24 34	3202

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	44° 17′ 14″	2962	45° 48′ 14″	2981	47° 18′ 51″	2998	48° 49′ 6″	3016
	Saturn	E.	25 36 42	2679	23 59 34	2699	22 22 53	2721	20 46 41	2744
	Antares	E.	45 20 53	2763	43 45 35	2787	42 10 50	2811	40 36 37	2838
	α Aquilæ	E.	94 11 28	3078	92 42 52	3093	91 14 34	3110	89 46 36	3126
2	Sun	W.	56 14 58	3101	57 43 6	3118	59 10 54	3134	60 38 22	3151
	Antares	E.	32 54 39	2994	31 24 19	3031	29 54 45	3073	28 26 2	3114
	α Aquilæ	E.	82 31 56	3215	81 6 5	3235	79 40 37	3255	78 15 33	3275
3	Sun	W.	67 50 59	3226	69 16 38	3240	70 42 0	3253	72 7 6	3267
	Mars	W.	33 39 29	3119	35 7 16	3132	36 34 47	3144	38 2 2	3157
	Spica	W.	27 34 43	2956	29 5 51	2960	30 36 54	2967	32 7 48	2973
	α Aquilæ	E.	71 16 13	3382	69 53 36	3405	68 31 25	3429	67 9 41	3454
	Jupiter	E.	102 45 25	2833	101 11 40	2845	99 38 11	2858	98 4 58	2870
	Fomalhaut	E.	104 4 49	3226	102 39 11	3236	101 13 44	3244	99 48 27	3253
4	Sun	W.	79 8 54	3326	80 32 35	3337	81 56 4	3347	83 19 21	3356
	Mars	W.	45 14 47	3213	46 40 41	3223	48 6 22	3233	49 31 53	3242
	Spica	W.	39 40 8	3009	41 10 9	3017	42 40 1	3023	44 9 45	3030
	α Aquilæ	E.	60 28 8	3587	59 9 19	3617	57 51 3	3648	56 33 20	3680
	Jupiter	E.	90 22 36	2924	88 50 48	2935	87 19 13	2943	85 47 49	2952
	Fomalhaut	E.	92 44 41	3299	91 20 28	3309	89 56 27	3318	88 32 36	3326
5	Sun	W.	90 13 14	3397	91 35 34	3404	92 57 46	3410	94 19 51	3415
	Mars	W.	56 36 53	3281	58 1 27	3287	59 25 54	3293	60 50 14	3298
	Spica	W.	51 36 23	3060	53 5 21	3065	54 34 14	3069	56 3 1	3073
	Saturn	W.	24 12 10	3083	25 40 40	3087	27 9 5	3091	28 37 26	3093
	α Aquilæ	E.	50 13 56	3870	49 0 6	3915	47 47 1	3963	46 34 45	4015
	Jupiter	E.	78 13 26	2989	76 43 0	2996	75 12 41	3001	73 42 30	3006
	Fomalhaut	E.	81 36 0	3373	80 13 13	3382	78 50 36	3391	77 28 9	3400
	α Pegasi	E.	96 13 40	3303	94 49 32	3308	93 25 30	3313	92 1 33	3318
6	Sun	W.	101 8 58	3435	102 30 35	3438	103 52 9	3439	105 13 41	3441
	Mars	W.	67 50 32	3317	69 14 24	3319	70 38 13	3321	72 1 59	3323
	Spica	W.	63 25 51	3088	64 54 15	3089	66 22 38	3091	67 50 58	3091
	Saturn	W.	35 58 23	3105	37 26 26	3107	38 54 27	3107	40 22 28	3109
	α Aquilæ	E.	40 47 28	4346	39 41 18	4433	38 36 26	4527	37 32 58	4632
	Jupiter	E.	66 12 58	3025	64 43 17	3027	63 13 38	3030	61 44 2	3030
	Fomalhaut	E.	70 38 32	3447	69 17 9	3456	67 55 56	3467	66 34 55	3477
	α Pegasi	E.	85 3 7	3338	83 39 40	3342	82 16 17	3345	80 52 58	3350
7	Sun	W.	112 1 8	3440	113 22 39	3439	114 44 11	3437	116 5 46	3434
	Mars	W.	79 0 38	3323	80 24 24	3321	81 48 11	3319	83 12 0	3317
	Spica	W.	75 12 37	3090	76 40 59	3088	78 9 23	3086	79 37 50	3083
	Saturn	W.	47 42 28	3106	49 10 31	3104	50 38 36	3101	52 6 44	3098
	Antares	W.	30 30 10	3319	31 54 0	3296	33 18 16	3278	34 42 53	3260
	Jupiter	E.	54 16 16	3031	52 46 43	3030	51 17 8	3030	49 47 32	3027
	Fomalhaut	E.	59 52 48	3535	58 33 2	3549	57 13 32	3563	55 54 17	3578
	α Pegasi	E.	73 57 25	3366	72 34 30	3370	71 11 39	3373	69 48 52	3377
8	Sun	W.	122 54 34	3415	124 16 34	3410	125 38 39	3404	127 0 51	3399
	Mars	W.	90 11 59	3296	91 36 12	3294	93 0 31	3288	94 24 56	3282
	Spica	W.	87 1 0	3065	88 29 53	3060	89 58 51	3055	91 27 56	3050
	Saturn	W.	59 28 22	3080	60 56 56	3074	62 25 37	3070	63 54 23	3065
	Antares	W.	41 50 41	3188	43 17 4	3177	44 43 41	3164	46 10 33	3153

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Jupiter E.	48° 17′ 53″	3025	46° 48′ 11″	3022	45° 18′ 26″	3019	43° 48′ 37″	3016
	Fomalhaut E.	54 35 19	3595	53 16 39	3612	51 58 18	3632	50 40 18	3652
	a Pegasi E.	68 26 9	3380	67 3 30	3384	65 40 55	3388	64 18 25	3393
9	Sun W.	128 23 9	3392	129 45 35	3386	131 8 8	3379	132 30 49	3372
	Mars W.	95 49 28	3276	97 14 7	3270	98 38 54	3264	100 3 48	3256
	Spica W.	92 57 7	3043	94 26 26	3038	95 55 52	3031	97 25 26	3025
	Saturn W.	65 23 16	3058	66 52 17	3052	68 21 26	3045	69 50 43	3039
	Antares W.	47 37 39	3141	49 4 59	3130	50 32 32	3119	52 0 19	3108
	Jupiter E.	36 18 22	2994	34 48 2	2989	33 17 36	2985	31 47 4	2979
	Fomalhaut E.	44 16 43	3794	43 1 35	3834	41 47 8	3877	40 33 25	3924
	a Pegasi E.	57 27 23	3423	56 5 32	3431	54 43 50	3439	53 22 18	3450
	a Arietis E.	100 6 21	3162	98 39 26	3154	97 12 22	3147	95 45 9	3139
10	Mars W.	107 10 30	3217	108 36 20	3208	110 2 19	3199	111 28 30	3190
	Saturn W.	77 19 20	3000	78 49 33	2991	80 19 57	2983	81 50 31	2973
	Antares W.	59 22 33	3053	60 51 40	3042	62 21 1	3031	63 50 35	3020
	a Pegasi E.	46 38 4	3525	45 18 7	3546	43 58 34	3571	42 39 28	3600
	a Arietis E.	88 26 47	3101	86 58 38	3092	85 30 19	3084	84 1 50	3076
11	Saturn W.	89 26 17	2926	90 58 3	2916	92 30 1	2906	94 2 12	2896
	Antares W.	71 21 51	2965	72 52 47	2954	74 23 58	2942	75 55 23	2931
	a Arietis E.	76 36 55	3036	75 7 26	3028	73 37 48	3020	72 8 0	3012
	Aldebaran E.	109 3 11	2894	107 30 45	2884	105 58 6	2874	104 25 14	2864
12	Saturn W.	101 46 24	2845	103 19 54	2833	104 53 39	2823	106 27 37	2812
	Antares W.	83 35 58	2876	85 8 48	2866	86 41 51	2855	88 15 8	2844
	a Aquilæ W.	41 5 52	3997	42 17 35	3916	43 30 39	3842	44 44 58	3773
	a Arietis E.	64 36 41	2977	63 6 0	2972	61 35 12	2966	60 4 17	2962
	Aldebaran E	96 37 37	2811	95 3 24	2801	93 28 58	2791	91 54 18	2780
13	Antares W.	96 4 59	2792	97 39 37	2782	99 14 29	2772	100 49 34	2762
	a Aquilæ W.	51 12 45	3503	52 33 6	3460	53 54 15	3419	55 16 10	3382
	a Arietis E.	52 28 21	2946	50 57 0	2946	49 25 39	2946	47 54 19	2948
	Aldebaran E.	83 57 28	2726	82 21 23	2716	80 45 5	2706	79 8 33	2696
14	a Aquilæ W.	62 15 44	3226	63 41 24	3198	65 7 35	3173	66 34 16	3151
	Fomalhaut W.	31 25 22	4177	32 34 10	4037	33 45 13	3911	34 58 22	3797
	Jupiter W.	26 43 27	2627	28 21 45	2615	30 0 19	2604	31 39 7	2593
	a Arietis E.	40 19 0	2986	38 48 30	3001	37 18 19	3021	35 48 32	3043
	Aldebaran E.	71 2 24	2644	69 24 29	2635	67 46 21	2624	66 7 59	2615
15	a Aquilæ W.	73 54 9	3062	75 23 17	3037	76 52 44	3022	78 22 30	3008
	Fomalhaut W.	41 29 49	3391	42 52 16	3332	44 15 50	3278	45 40 27	3230
	Jupiter W.	39 56 52	2542	41 37 6	2533	43 17 34	2524	44 58 14	2515
	Aldebaran E.	57 52 56	2569	56 13 18	2559	54 33 27	2551	52 53 24	2542
	Pollux E.	101 34 41	2649	99 56 53	2640	98 18 53	2631	96 40 40	2621
16	a Aquilæ W.	85 55 21	2960	87 26 37	2941	88 58 4	2923	90 29 41	2906
	Jupiter W.	53 24 38	2472	55 6 30	2465	56 48 32	2458	58 30 46	2450
	Fomalhaut W.	52 56 35	3039	54 26 0	3007	55 56 4	2980	57 26 42	2954
	Aldebaran E.	44 30 15	2501	42 49 3	2494	41 7 41	2486	39 26 8	2479
	Pollux E.	88 26 34	2580	86 47 11	2572	85 7 38	2565	83 27 55	2560
17	a Aquilæ W.	98 9 41	2903	99 41 56	2901	101 14 14	2900	102 46 33	2900

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
8	Jupiter	E.	42° 18′ 44″	3012	40° 48′ 46″	3008	39° 18′ 44″	3004	37° 48′ 36″	2999
	Fomalhaut	E.	49 22 40	3676	48 5 27	3702	46 48 42	3730	45 32 27	3760
	a Pegasi	E.	62 56 1	3398	61 33 42	3403	60 11 29	3408	58 49 22	3415
9	SUN	W.	133 53 38	3364	135 16 36	3354	136 39 44	3347	138 3 1	3338
	Mars	W.	101 28 50	3249	102 54 2	3242	104 19 22	3234	105 44 51	3225
	Spica	W.	98 55 8	3018	100 24 59	3010	101 54 59	3003	103 25 8	2996
	Saturn	W.	71 20 8	3031	72 49 42	3024	74 19 25	3017	75 49 17	3010
	Antares	W.	53 28 19	3097	54 56 32	3086	56 24 59	3075	57 53 39	3064
	Jupiter	E.	30 16 25	2973	28 45 40	2969	27 14 47	2963	25 43 49	2958
	Fomalhaut	E.	39 20 30	3979	38 8 30	4041	36 57 31	4111	35 47 40	4191
	a Pegasi	E.	52 0 58	3462	50 39 51	3474	49 18 58	3489	47 58 22	3506
	a Arietis	E.	94 17 47	3132	92 50 16	3124	91 22 36	3116	89 54 46	3109
10	Mars	W.	112 54 51	3181	114 21 23	3171	115 48 7	3161	117 15 2	3152
	Saturn	W.	83 21 17	2965	84 52 14	2955	86 23 23	2946	87 54 44	2936
	Antares	W.	65 20 23	3009	66 50 25	2998	68 20 40	2987	69 51 9	2977
	a Pegasi	E.	41 20 54	3632	40 2 54	3668	38 45 33	3709	37 28 56	3758
	a Arietis	E.	82 33 11	3068	81 4 22	3060	79 35 23	3052	78 6 14	3043
11	Saturn	W.	95 34 36	2886	97 7 13	2876	98 40 3	2865	100 13 7	2856
	Antares	W.	77 27 2	2920	78 58 55	2909	80 31 2	2898	82 3 23	2887
	a Arietis	E.	70 38 2	3005	69 7 55	2997	67 37 39	2990	66 7 14	2984
	Aldebaran	E.	102 52 9	2854	101 18 51	2844	99 45 20	2833	98 11 35	2823
12	Saturn	W.	108 1 48	2801	109 36 14	2791	111 10 54	2781	112 45 47	2771
	Antares	W.	89 48 39	2833	91 22 24	2823	92 56 22	2812	94 30 34	2802
	a Aquilæ	W.	46 0 28	3711	47 17 3	3653	48 34 40	3599	49 53 15	3549
	a Arietis	E.	58 33 16	2957	57 2 9	2953	55 30 57	2950	53 59 41	2946
	Aldebaran	E.	90 19 24	2769	88 44 16	2759	87 8 54	2748	85 33 18	2738
13	Antares	W.	102 24 52	2752	104 0 23	2743	105 36 6	2733	107 12 2	2723
	a Aquilæ	W.	56 38 47	3346	58 2 6	3313	59 26 3	3282	60 50 36	3252
	a Arietis	E.	46 23 1	2952	44 51 48	2958	43 20 42	2965	41 49 45	2974
	Aldebaran	E.	77 31 47	2685	75 54 47	2675	74 17 33	2664	72 40 5	2655
14	*a* Aquilæ	W.	68 1 24	3129	69 28 59	3108	70 56 59	3088	72 25 23	3070
	Fomalhaut	W.	36 13 27	3697	37 30 17	3609	38 48 42	3528	40 8 35	3456
	Jupiter	W.	33 18 12	2583	34 57 31	2572	36 37 4	2562	38 16 51	2552
	a Arietis	E.	34 19 13	3072	32 50 29	3106	31 22 27	3148	29 55 15	3197
	Aldebaran	E.	64 29 24	2606	62 50 36	2596	61 11 35	2587	59 32 22	2577
15	*a* Aquilæ	W.	79 52 33	2994	81 22 53	2982	82 53 28	2970	84 24 18	2960
	Fomalhaut	W.	47 6 1	3185	48 32 28	3143	49 59 46	3106	51 27 50	3071
	Jupiter	W.	46 39 7	2506	48 20 12	2497	50 1 29	2489	51 42 58	2481
	Aldebaran	E.	51 13 9	2534	49 32 43	2525	47 52 5	2517	46 11 16	2509
	Pollux	E.	95 2 14	2612	93 23 36	2604	91 44 47	2596	90 5 46	2588
16	*a* Aquilæ	W.	92 1 27	2920	93 33 21	2914	95 5 22	2909	96 37 29	2906
	Jupiter	W.	60 13 10	2442	61 55 44	2435	63 38 29	2428	65 21 24	2421
	Fomalhaut	W.	58 57 52	2931	60 29 32	2908	62 1 41	2887	63 34 16	2869
	Aldebaran	E.	37 44 25	2471	36 2 31	2464	34 20 27	2457	32 38 13	2450
	Pollux	E.	81 48 3	2552	80 8 2	2546	78 27 52	2540	76 47 34	2533
17	*a* Aquilæ	W.	104 18 52	2901	105 51 9	2903	107 23 24	2907	108 55 34	2912

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Jupiter	W.	67° 4′ 28″	2416	68° 47′ 42″	2408	70° 31′ 6″	2401	72° 14′ 39″	2396
	Fomalhaut	W.	65 7 16	2849	66 40 40	2833	68 14 25	2817	69 48 31	2802
	a Pegasi	W.	50 23 7	2909	51 55 15	2880	53 27 59	2855	55 1 16	2831
	Aldebaran	E	30 55 50	2443	29 13 17	2437	27 30 35	2431	25 47 44	2424
	Pollux	E.	75 7 7	2528	73 26 33	2523	71 45 52	2519	70 5 5	2514
	Sun	E.	137 0 50	2764	135 25 35	2757	133 50 11	2750	132 14 38	2744
18	Jupiter	W.	80 54 34	2366	82 38 59	2360	84 23 31	2355	86 8 11	2349
	Fomalhaut	W.	77 43 27	2742	79 19 11	2732	80 55 9	2723	82 31 18	2716
	a Pegasi	W.	62 54 40	2736	64 30 33	2720	66 6 46	2706	67 43 18	2692
	Pollux	E.	61 39 44	2497	59 58 27	2496	58 17 8	2494	56 35 47	2494
	Sun	E.	124 14 41	2711	122 38 16	2705	121 1 43	2699	119 25 2	2694
19	Jupiter	W.	94 53 24	2324	96 38 48	2320	98 24 19	2315	100 9 56	2311
	Fomalhaut	W.	90 34 26	2685	92 11 26	2681	93 48 32	2678	95 25 42	2675
	a Pegasi	W.	75 50 4	2638	77 28 7	2630	79 6 21	2622	80 44 46	2615
	a Arietis	W.	32 27 51	2828	34 1 42	2782	35 36 34	2741	37 12 19	2706
	Pollux	E.	48 9 2	2499	46 27 48	2504	44 46 40	2509	43 5 39	2516
	Sun	E.	111 19 46	2666	109 42 21	2661	108 4 50	2656	106 27 11	2652
20	Jupiter	W.	108 59 36	2290	110 45 50	2287	112 32 9	2283	114 18 34	2279
	a Pegasi	W.	88 59 6	2586	90 38 20	2583	92 17 39	2579	93 57 3	2577
	a Arietis	W.	45 21 20	2578	47 0 45	2560	48 40 36	2543	50 20 50	2527
	Pollux	E.	34 43 46	2580	33 4 23	2607	31 25 31	2629	29 47 15	2660
	Sun	E.	98 17 22	2629	96 39 6	2624	95 0 44	2620	93 22 16	2616
21	a Pegasi	W.	102 14 37	2573	103 54 9	2574	105 33 39	2577	107 13 6	2579
	a Arietis	W.	58 46 51	2467	60 28 51	2458	62 11 4	2449	63 53 29	2441
	Aldebaran	W.	24 50 39	2287	26 36 57	2284	28 23 20	2281	30 9 47	2279
	Sun	E.	85 8 39	2598	83 29 41	2594	81 50 38	2591	80 11 31	2588
22	a Arietis	W.	72 28 3	2411	74 11 22	2407	75 54 47	2403	77 38 18	2400
	Aldebaran	W.	39 3 0	2266	40 49 49	2265	42 36 40	2263	44 23 34	2262
	Sun	E.	71 55 1	2576	70 15 33	2574	68 36 3	2573	66 56 31	2572
23	a Arietis	W.	86 16 47	2391	88 0 35	2390	89 44 24	2390	91 28 13	2390
	Aldebaran	W.	53 18 28	2258	55 5 29	2256	56 52 31	2258	58 39 32	2258
	Sun	E.	58 38 27	2568	56 58 48	2568	55 19 9	2569	53 39 31	2569
24	Aldebaran	W.	67 34 23	2265	69 21 14	2267	71 8 2	2269	72 54 47	2272
	Pollux	W.	25 54 21	2684	27 31 22	2640	29 9 23	2603	30 48 14	2573
	Sun	E.	45 21 40	2577	43 42 14	2580	42 2 51	2583	40 23 32	2586
25	Aldebaran	W.	81 47 17	2291	83 33 29	2296	85 19 34	2302	87 5 31	2307
	Pollux	W.	39 10 44	2486	40 52 17	2478	42 34 1	2472	44 15 54	2466
	Sun	E.	32 8 21	2610	30 29 39	2616	28 51 6	2623	27 12 42	2629
29	Sun	W.	19 4 32	2962	20 35 33	2976	22 6 16	2989	23 36 43	3002
	Antares	E.	43 57 27	2746	42 21 48	2769	40 46 39	2792	39 12 1	2817
	a Aquilæ	E.	92 54 55	3056	91 25 52	3070	89 57 6	3084	88 28 37	3098
30	Sun	W.	31 4 43	3073	32 33 26	3087	34 1 52	3101	35 30 0	3115
	Antares	E.	31 27 42	2972	29 56 54	3012	28 26 56	3054	26 57 50	3106
	a Aquilæ	E.	81 10 52	3182	79 44 21	3200	78 18 12	3220	76 52 26	3239
	Jupiter	E.	110 58 20	2698	109 21 38	2713	107 45 15	2726	106 9 10	2740

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Jupiter	W.	73° 58′ 20″	2389	75° 42′ 11″	2383	77° 26′ 11″	2377	79° 10′ 18″	2371
	Fomalhaut	W.	71 22 56	2788	72 57 39	2775	74 32 40	2763	76 7 57	2753
	α Pegasi	W.	56 35 3	2810	58 9 18	2788	59 44 1	2769	61 19 9	2752
	Aldebaran	E.	24 4 44	2418	22 21 35	2412	20 38 17	2406	18 54 50	2400
	Pollux	E.	68 24 11	2510	66 43 12	2506	65 2 7	2503	63 20 58	2499
	Sun	E.	130 38 56	2737	129 3 5	2731	127 27 6	2724	125 50 58	2717
18	Jupiter	W.	87 52 59	2344	89 37 54	2339	91 22 57	2334	93 8 7	2329
	Fomalhaut	W.	84 7 37	2708	85 44 6	2701	87 20 45	2695	88 57 32	2689
	α Pegasi	W.	69 20 8	2680	70 57 15	2669	72 34 37	2657	74 12 14	2648
	Pollux	E.	54 54 25	2493	53 13 2	2494	51 31 40	2495	49 50 20	2497
	Sun	E.	117 48 14	2688	116 11 18	2683	114 34 15	2677	112 57 4	2672
19	Jupiter	W.	101 55 40	2307	103 41 30	2302	105 27 26	2298	107 13 29	2294
	Fomalhaut	W.	97 2 55	2673	98 40 11	2672	100 17 29	2672	101 54 47	2672
	α Pegasi	W.	82 23 21	2608	84 2 5	2601	85 40 58	2596	87 19 59	2591
	α Arietis	W.	38 48 51	2675	40 26 5	2646	42 3 57	2621	43 42 23	2599
	Pollux	E.	41 24 48	2525	39 44 9	2534	38 3 43	2546	36 23 34	2561
	Sun	E.	104 49 26	2646	103 11 34	2642	101 33 36	2636	99 55 32	2633
20	Jupiter	W.	116 5 3	2276	117 51 38	2273	119 38 17	2270	121 25 1	2266
	α Pegasi	W.	95 36 30	2574	97 16 0	2573	98 55 32	2572	100 35 5	2573
	α Arietis	W.	52 1 26	2512	53 42 22	2500	55 23 35	2488	57 5 5	2477
	Pollux	E.	28 9 42	2701	26 33 3	2750	24 57 30	2811	23 23 17	2887
	Sun	E.	91 43 43	2612	90 5 5	2608	88 26 21	2604	86 47 32	2601
21	α Pegasi	W.	108 52 30	2583	110 31 48	2588	112 11 0	2593	113 50 4	2600
	α Arietis	W.	65 36 5	2434	67 18 51	2427	69 1 47	2422	70 44 51	2416
	Aldebaran	W.	31 56 18	2276	33 42 53	2273	35 29 32	2271	37 16 14	2268
	Sun	E.	78 32 20	2586	76 53 5	2583	75 13 47	2581	73 34 26	2578
22	α Arietis	W.	79 21 53	2397	81 5 32	2394	82 49 15	2393	84 33 0	2391
	Aldebaran	W.	46 10 30	2260	47 57 28	2260	49 44 27	2259	51 31 27	2258
	Sun	E.	65 16 57	2570	63 37 21	2569	61 57 44	2569	60 18 6	2568
23	α Arietis	W.	93 12 2	2391	94 55 49	2394	96 39 33	2396	98 23 14	2399
	Aldebaran	W.	60 26 33	2259	62 13 33	2260	64 0 32	2261	65 47 29	2263
	Sun	E.	51 59 53	2570	50 20 17	2571	48 40 42	2573	47 1 10	2574
24	Aldebaran	W.	74 41 27	2276	76 28 2	2279	78 14 33	2283	80 0 58	2287
	Pollux	W.	32 27 46	2548	34 7 53	2527	35 48 28	2511	37 29 26	2497
	Sun	E.	38 44 18	2591	37 5 10	2594	35 26 7	2599	33 47 11	2604
25	Aldebaran	W.	88 51 20	2313	90 37 0	2320	92 22 31	2326	94 7 52	2333
	Pollux	W.	45 57 55	2462	47 40 1	2462	49 22 8	2461	51 4 16	2461
	Sun	E.	25 34 27	2638	23 56 23	2646	22 18 31	2655	20 40 51	2665
29	Sun	W.	25 6 53	3016	26 36 47	3030	28 6 23	3043	29 35 42	3056
	Antares	E.	37 37 55	2845	36 4 25	2873	34 31 31	2903	32 59 16	2935
	α Aquilæ	E.	87 0 25	3114	85 32 32	3129	84 4 58	3147	82 37 45	3163
30	Sun	W.	36 57 51	3130	38 25 24	3144	39 52 40	3159	41 19 38	3173
	Antares	E.	25 29 47	3164	24 2 55	3230	22 37 21	3304	21 13 14	3386
	α Aquilæ	E.	75 27 3	3260	74 2 4	3281	72 37 30	3303	71 13 22	3325
	Jupiter	E.	104 33 22	2753	102 57 53	2767	101 22 42	2780	99 47 48	2793

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	 Diff. for 1 hour.	 *Apparent* Declination.	 Diff. for 1 hour.	 Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	12 28 44.17	9.060	S. 3 6 19.9	58.32	16 1.42	64.35	10 14.04	0.797
Wed.	2	12 32 21.69	9.072	3 29 38.1	58.23	16 1.70	64.39	10 33.01	0.785
Thur.	3	12 35 59.50	9.084	3 52 54.1	58.12	16 1.98	64.44	10 51.70	0.772
Fri.	4	12 39 37.63	9.097	4 16 7.4	58.00	16 2.27	64.49	11 10.08	0.758
Sat.	5	12 43 16.09	9.111	4 39 17.5	57.86	16 2.56	64.54	11 28.12	0.744
Sun.	6	12 46 54.89	9.126	5 2 24.1	57.70	16 2.84	64.60	11 45.83	0.729
Mon.	7	12 50 34.05	9.142	5 25 26.8	57.53	16 3.12	64.66	12 3.17	0.714
Tues.	8	12 54 13.61	9.158	5 48 25.2	57.35	16 3.40	64.72	12 20.11	0.697
Wed.	9	12 57 53.59	9.176	6 11 19.0	57.15	16 3.68	64.78	12 36.64	0.680
Thur.	10	13 1 34.00	9.195	6 34 7.9	56.94	16 4.96	64.85	12 52.74	0.661
Fri.	11	13 5 14.85	9.214	6 56 51.5	56.71	16 4.24	64.92	13 8.40	0.642
Sat.	12	13 8 56.19	9.234	7 19 29.5	56.47	16 4.52	64.99	13 23.57	0.622
Sun.	13	13 12 38.02	9.255	7 42 1.5	56.21	16 4.79	65.07	13 38.25	0.601
Mon.	14	13 16 20.37	9.278	8 4 27.1	55.94	16 5.07	65.15	13 52.42	0.579
Tues.	15	13 20 3.26	9.301	8 26 45.9	55.65	16 5.34	65.23	14 6.04	0.556
Wed.	16	13 23 46.72	9.325	8 48 57.6	55.34	16 5.61	65.31	14 19.09	0.532
Thur.	17	13 27 30.78	9.350	9 11 1.9	55.02	16 5.88	65.40	14 31.55	0.507
Fri.	18	13 31 15.45	9.376	9 32 58.4	54.68	16 6.15	65.49	14 43.40	0.481
Sat.	19	13 35 0.74	9.402	9 54 46.5	54.33	16 6.41	65.58	14 54.63	0.454
Sun.	20	13 38 46.67	9.429	10 16 25.9	53.96	16 6.68	65.67	15 5.22	0.427
Mon.	21	13 42 33.26	9.456	10 37 56.4	53.58	16 6.94	65.77	15 15.16	0.399
Tues.	22	13 46 20.54	9.485	10 59 17.7	53.18	16 7.20	65.86	15 24.42	0.371
Wed.	23	13 50 8.51	9.514	11 20 29.2	52.77	16 7.46	65.96	15 32.98	0.342
Thur.	24	13 53 57.17	9.543	11 41 30.5	52.34	16 7.72	66.06	15 40.84	0.313
Fri.	25	13 57 46.55	9.573	12 2 21.2	51.89	16 7.98	66.16	15 48.00	0.283
Sat.	26	14 1 36.66	9.604	12 23 0.8	51.42	16 8.24	66.26	15 54.43	0.252
Sun.	27	14 5 27.51	9.635	12 43 29.1	50.93	16 8.50	66.37	16 0.12	0.221
Mon.	28	14 9 19.10	9.666	13 3 45.6	50.42	16 8.76	66.48	16 5.06	0.190
Tues.	29	14 13 11.45	9.698	13 23 49.8	49.90	16 9.02	66.59	16 9.25	0.158
Wed.	30	14 17 4.56	9.730	13 43 41.2	49.36	16 9.28	66.70	16 12.68	0.126
Thur.	31	14 20 58.43	9.762	14 3 19.5	48.81	16 9.53	66.81	16 15.35	0.094
Fri.	32	14 24 53.09	9.794	S. 14 22 44.4	48.24	16 9.79	66.92	16 17.25	0.062

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	12 28 45.72	9.060	S. 3 6 29.8	58.32	10 14.17	0.797	12 38 59.89
Wed.	2	12 32 23.29	9.072	3 29 48.4	58.23	10 33.15	0.785	12 42 56.44
Thur.	3	12 36 1.15	9.084	3 53 4.6	58.12	10 51.84	0.772	12 46 52.99
Fri.	4	12 39 39.32	9.097	4 16 18.1	58.00	11 10.22	0.758	12 50 49.54
Sat.	5	12 43 17.83	9.111	4 39 28.5	57.86	11 28.26	0.744	12 54 46.09
Sun.	6	12 46 56.68	9.126	5 2 35.4	57.70	11 45.97	0.729	12 58 42.65
Mon.	7	12 50 35.89	9.142	5 25 38.3	57.53	12 3.31	0.714	13 2 39.20
Tues.	8	12 54 15.50	9.158	5 48 36.9	57.35	12 20.25	0.697	13 6 35.75
Wed.	9	12 57 55.52	9.176	6 11 31.0	57.15	12 36.78	0.680	13 10 32.30
Thur.	10	13 1 35.97	9.195	6 34 20.2	56.94	12 52.88	0.661	13 14 28.85
Fri.	11	13 5 16.87	9.214	6 57 4.0	56.71	13 8.54	0.642	13 18 25.41
Sat.	12	13 8 58.25	9.234	7 19 42.2	56.47	13 23.71	0.622	13 22 21.96
Sun.	13	13 12 40.12	9.255	7 42 14.3	56.21	13 38.39	0.601	13 26 18.51
Mon.	14	13 16 22.51	9.278	8 4 40.0	55.94	13 52.55	0.579	13 30 15.06
Tues.	15	13 20 5.45	9.301	8 26 59.0	55.65	14 6.17	0.556	13 34 11.62
Wed.	16	13 23 48.95	9.325	8 49 10.9	55.34	14 19.22	0.532	13 38 8.17
Thur.	17	13 27 33.04	9.350	9 11 15.3	55.02	14 31.68	0.507	13 42 4.72
Fri.	18	13 31 17.75	9.376	9 33 11.8	54.68	14 43.52	0.481	13 46 1.27
Sat.	19	13 35 3.08	9.402	9 55 0.0	54.33	14 54.75	0.454	13 49 57.83
Sun.	20	13 38 49.05	9.429	10 16 39.5	53.96	15 5.33	0.427	13 53 54.38
Mon.	21	13 42 35.67	9.456	10 38 10.1	53.58	15 15.26	0.399	13 57 50.93
Tues.	22	13 46 22.98	9.485	10 59 31.4	53.18	15 24.51	0.371	14 1 47.49
Wed.	23	13 50 10.98	9.514	11 20 42.9	52.77	15 33.06	0.342	14 5 44.04
Thur.	24	13 53 59.67	9.543	11 41 44.2	52.34	15 40.92	0.313	14 9 40.59
Fri.	25	13 57 49.07	9.573	12 2 34.9	51.89	15 48.07	0.283	14 13 37.14
Sat.	26	14 1 39.20	9.604	12 23 14.5	51.42	15 54.50	0.252	14 17 33.70
Sun.	27	14 5 30.07	9.635	12 43 42.7	50.93	16 0.18	0.221	14 21 30.25
Mon.	28	14 9 21.69	9.666	13 3 59.1	50.42	16 5.11	0.190	14 25 26.80
Tues.	29	14 13 14.06	9.698	13 24 3.2	49.90	16 9.30	0.158	14 29 23.36
Wed.	30	14 17 7.19	9.730	13 43 54.5	49.36	16 12.72	0.126	14 33 19.91
Thur.	31	14 21 1.08	9.762	14 3 32.7	48.81	16 15.39	0.094	14 37 16.47
Fri.	32	14 24 55.75	9.794	S.14 22 57.5	48.24	16 17.27	0.062	14 41 13.02

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	274	187 50 9.0	49 36.8	147.70	+0.41	0.0002624	52.8	11 19 8.55
2	275	188 49 14.7	48 42.5	147.78	0.46	.0001355	53.0	11 15 12.65
3	276	189 48 22.2	47 49.9	147.85	0.47	0.0000081	53.2	11 11 16.75
4	277	190 47 31.7	46 59.3	147.92	0.45	9.9998802	53.3	11 7 20.84
5	278	191 46 42.8	46 10.3	148.00	0.40	.9997522	53.4	11 3 24.93
6	279	192 45 55.6	45 23.0	148.07	0.32	.9996241	53.4	10 59 29.02
7	280	193 45 10.2	44 37.6	148.15	0.22	.9994961	53.3	10 55 33.11
8	281	194 44 26.7	43 54.0	148.22	+0.11	.9993685	53.1	10 51 37.21
9	282	195 43 44.9	43 12.1	148.30	—0.02	.9992413	52.9	10 47 41.30
10	283	196 43 4.9	42 32.0	148.37	0.16	.9991146	52.6	10 43 45.39
11	284	197 42 26.8	41 53.8	148.45	0.29	.9989886	52.3	10 39 49.48
12	285	198 41 50.6	41 17.6	148.53	0.42	.9988635	52.0	10 35 53.57
13	286	199 41 16.4	40 43.3	148.62	0.53	.9987392	51.6	10 31 57.66
14	287	200 40 44.2	40 11.0	148.70	0.62	.9986158	51.2	10 28 1.76
15	288	201 40 14.2	39 40.9	148.79	0.68	.9984934	50.8	10 24 5.85
16	289	202 39 46.4	39 13.0	148.88	0.71	.9983719	50.4	10 20 9.95
17	290	203 39 20.9	38 47.4	148.98	0.71	.9982513	50.1	10 16 14.04
18	291	204 38 57.5	38 23.9	149.07	0.68	.9981315	49.8	10 12 18.14
19	292	205 38 36.3	38 2.6	149.17	0.62	.9980124	49.5	10 8 22.24
20	293	206 38 17.4	37 43.6	149.26	0.54	.9978939	49.2	10 4 26.33
21	294	207 38 0.9	37 27.0	149.36	0.44	.9977760	49.0	10 0 30.42
22	295	208 37 46.6	37 12.6	149.45	0.32	.9976586	48.8	9 56 34.51
23	296	209 37 34.5	37 0.4	149.54	0.19	.9975416	48.7	9 52 38.60
24	297	210 37 24.6	36 50.4	149.63	—0.05	.9974249	48.5	9 48 42.69
25	298	211 37 16.9	36 42.6	149.72	+0.08	.9973085	48.4	9 44 46.78
26	299	212 37 11.3	36 36.9	149.81	0.19	.9971924	48.3	9 40 50.88
27	300	213 37 7.7	36 33.2	149.89	0.28	.9970765	48.2	9 36 54.97
28	301	214 37 6.1	36 31.5	149.97	0.36	.9969609	48.1	9 32 59.06
29	302	215 37 6.4	36 31.7	150.05	0.41	.9968455	48.0	9 29 3.16
30	303	216 37 8.5	36 33.7	150.13	0.43	.9967304	47.9	9 25 7.25
31	304	217 37 12.4	36 37.5	150.20	0.42	.9966156	47.7	9 21 11.34
32	305	218 37 17.9	36 42.9	150.27	+0.38	9.9965013	47.4	9 17 15.43

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 11.9	15 7.1	55 40.1	-1.53	55 22.5	-1.41	2 43.3	1.99	3.5
2	15 2.7	14 58.8	55 6.3	1.27	54 52.0	1.11	3 31.0	1.99	4.5
3	14 55.5	14 52.8	54 39.7	0.93	54 29.7	0.73	4 18.8	1.99	5.5
4	14 50.7	14 49.3	54 22.1	0.53	54 17.0	-0.32	5 6.5	1.99	6.5
5	14 48.6	14 48.6	54 14.5	-0.10	54 14.6	+0.12	5 54.0	1.97	7.5
6	14 49.4	14 50.8	54 17.4	+0.34	54 22.7	0.55	6 41.2	1.96	8.5
7	14 53.0	14 55.8	54 30.5	0.75	54 40.8	0.95	7 28.1	1.94	9.5
8	14 59.2	15 3.1	54 53.2	1.13	55 7.7	1.29	8 14.6	1.93	10.5
9	15 7.5	15 12.4	55 24.1	1.42	55 41.9	1.54	9 0.9	1.93	11.5
10	15 17.6	15 23.0	56 1.0	1.63	56 21.0	1.69	9 47.5	1.95	12.5
11	15 28.6	15 34.2	56 41.4	1.71	57 2.0	1.70	10 34.7	1.98	13.5
12	15 39.8	15 45.1	57 22.3	1.67	57 42.0	1.60	11 23.0	2.04	14.5
13	15 50.2	15 54.9	58 0.7	1.50	58 18.0	1.38	12 12.9	2.12	15.5
14	15 59.2	16 3.0	58 33.8	1.24	58 47.7	1.07	13 4.9	2.22	16.5
15	16 6.2	16 8.9	58 59.5	0.90	59 9.3	0.72	13 59.2	2.31	17.5
16	16 10.9	16 12.4	59 16.8	0.54	59 22.2	0.37	14 55.7	2.39	18.5
17	16 13.3	16 13.7	59 25.6	+0.20	59 26.9	+0.04	15 53.6	2.43	19.5
18	16 13.6	16 13.0	59 26.5	-0.10	59 24.5	-0.23	16 52.0	2.43	20.5
19	16 12.1	16 10.8	59 21.0	0.35	59 16.2	0.45	17 49.8	2.38	21.5
20	16 9.1	16 7.2	59 10.2	0.54	59 3.3	0.62	18 46.0	2.30	22.5
21	16 6.1	16 2.7	58 55.4	0.69	58 46.7	0.76	19 40.1	2.21	23.5
22	16 0.1	15 57.3	58 37.1	0.83	58 26.7	0.90	20 32.1	2.13	24.5
23	15 54.2	15 51.0	58 15.5	0.97	58 3.5	1.03	21 22.3	2.06	25.5
24	15 47.5	15 43.8	57 50.7	1.09	57 37.2	1.16	22 11.2	2.02	26.5
25	15 39.9	15 35.9	57 22.9	1.21	57 8.0	1.26	22 59.2	1.99	27.5
26	15 31.7	15 27.4	56 52.6	1.30	56 36.8	1.33	23 47.0	1.99	28.5
27	15 23.0	15 18.6	56 20.7	1.34	56 4.6	1.33	δ		29.5
28	15 14.3	15 10.0	55 48.7	1.31	55 33.2	1.27	0 34.7	1.99	1.0
29	15 6.0	15 2.1	55 18.3	1.21	55 4.2	1.13	1 22.7	2.00	2.0
30	14 58.6	14 55.5	54 51.3	1.02	54 39.7	0.90	2 10.8	2.01	3.0
31	14 52.8	14 50.5	54 29.7	0.76	54 21.6	0.59	2 59.0	2.00	4.0
32	14 48.9	14 47.8	54 15.5	-0.42	54 11.5	-0.23	3 46.9	1.98	5.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 17 0.60	2.0913	S.13 13 54.1	7.056
1	15 19 6.08	2.0913	13 20 55.3	6.984
2	15 21 11.56	2.0912	13 27 52.2	6.913
3	15 23 17.03	2.0912	13 34 44.8	6.841
4	15 25 22.50	2.0911	13 41 33.1	6.769
5	15 27 27.97	2.0911	13 48 17.0	6.696
6	15 29 33.43	2.0910	13 54 56.6	6.623
7	15 31 38.89	2.0910	14 1 31.8	6.550
8	15 33 44.35	2.0910	14 8 2.6	6.476
9	15 35 49.81	2.0910	14 14 28.9	6.402
10	15 37 55.27	2.0909	14 20 50.8	6.328
11	15 40 0.73	2.0909	14 27 8.2	6.253
12	15 42 6.18	2.0909	14 33 21.2	6.178
13	15 44 11.64	2.0910	14 39 29.6	6.103
14	15 46 17.10	2.0909	14 45 33.5	6.027
15	15 48 22.56	2.0909	14 51 32.8	5.951
16	15 50 28.01	2.0909	14 57 27.6	5.874
17	15 52 33.46	2.0909	15 3 17.7	5.797
18	15 54 38.92	2.0910	15 9 3.3	5.720
19	15 56 44.38	2.0910	15 14 44.3	5.643
20	15 58 49.84	2.0910	15 20 20.6	5.566
21	16 0 55.30	2.0910	15 25 52.3	5.488
22	16 3 0.76	2.0911	15 31 19.2	5.410
23	16 5 6.22	2.0911	S.15 36 41.5	5.331

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 7 11.69	2.0911	S.15 41 59.0	5.252
1	16 9 17.15	2.0911	15 47 11.8	5.173
2	16 11 22.62	2.0912	15 52 19.8	5.094
3	16 13 28.09	2.0912	15 57 23.1	5.015
4	16 15 33.56	2.0912	16 2 21.6	4.935
5	16 17 39.03	2.0912	16 7 15.3	4.855
6	16 19 44.50	2.0912	16 12 4.2	4.774
7	16 21 49.97	2.0912	16 16 48.2	4.693
8	16 23 55.44	2.0912	16 21 27.3	4.613
9	16 26 0.91	2.0912	16 26 1.6	4.537
10	16 28 6.38	2.0912	16 30 31.1	4.452
11	16 30 11.85	2.0912	16 34 55.7	4.371
12	16 32 17.32	2.0912	16 39 15.6	4.290
13	16 34 22.79	2.0912	16 43 30.5	4.208
14	16 36 28.26	2.0912	16 47 40.4	4.126
15	16 38 33.73	2.0911	16 51 45.4	4.043
16	16 40 39.19	2.0911	16 55 45.4	3.961
17	16 42 44.66	2.0911	16 59 40.5	3.878
18	16 44 50.12	2.0911	17 3 30.6	3.796
19	16 46 55.58	2.0910	17 7 15.8	3.712
20	16 49 1.04	2.0910	17 10 56.0	3.629
21	16 51 6.50	2.0909	17 14 31.2	3.546
22	16 53 11.95	2.0909	17 18 1.4	3.463
23	16 55 17.40	2.0908	17 21 26.6	3.379
24	16 57 22.84	2.0908	S.17 24 46.9	3.296

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 57 22.84	2.0908	S.17 24 46.9	3.296
1	16 59 28.28	2.0907	17 28 2.1	3.212
2	17 1 33.72	2.0906	17 31 12.3	3.128
3	17 3 39.15	2.0905	17 34 17.4	3.044
4	17 5 44.58	2.0904	17 37 17.5	2.960
5	17 7 50.00	2.0903	17 40 12.5	2.875
6	17 9 55.42	2.0902	17 43 2.5	2.791
7	17 12 0.83	2.0901	17 45 47.4	2.706
8	17 14 6.23	2.0900	17 48 27.2	2.622
9	17 16 11.62	2.0898	17 51 1.9	2.537
10	17 18 17.01	2.0897	17 53 31.6	2.453
11	17 20 22.39	2.0896	17 55 56.2	2.368
12	17 22 27.76	2.0895	17 58 15.7	2.283
13	17 24 33.12	2.0894	18 0 30.1	2.198
14	17 26 38.47	2.0892	18 2 39.4	2.113
15	17 28 43.81	2.0890	18 4 43.6	2.028
16	17 30 49.14	2.0888	18 6 42.7	1.943
17	17 32 54.46	2.0886	18 8 36.7	1.858
18	17 34 59.77	2.0884	18 10 25.6	1.773
19	17 37 5.06	2.0881	18 12 9.4	1.687
20	17 39 10.34	2.0879	18 13 48.0	1.602
21	17 41 15.61	2.0877	18 15 21.5	1.516
22	17 43 20.86	2.0875	18 16 49.9	1.431
23	17 45 26.10	2.0872	S.18 18 13.2	1.346

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 47 31.32	2.0870	S.18 19 31.3	1.260
1	17 49 36.53	2.0867	18 20 44.3	1.174
2	17 51 41.72	2.0865	18 21 52.2	1.089
3	17 53 46.90	2.0862	18 22 54.9	1.003
4	17 55 52.06	2.0859	18 23 52.5	0.918
5	17 57 57.20	2.0856	18 24 45.0	0.832
6	18 0 2.32	2.0852	18 25 32.3	0.747
7	18 2 7.42	2.0849	18 26 14.5	0.661
8	18 4 12.51	2.0846	18 26 51.6	0.576
9	18 6 17.58	2.0843	18 27 23.6	0.490
10	18 8 22.62	2.0840	18 27 50.4	0.405
11	18 10 27.65	2.0836	18 28 12.1	0.319
12	18 12 32.65	2.0832	18 28 28.7	0.234
13	18 14 37.63	2.0828	18 28 40.2	0.148
14	18 16 42.59	2.0824	18 28 46.5	0.063
15	18 18 47.52	2.0820	18 28 47.8	0.022
16	18 20 52.43	2.0817	18 28 43.9	0.107
17	18 22 57.32	2.0813	18 28 34.9	0.193
18	18 25 2.18	2.0809	18 28 20.8	0.278
19	18 27 7.02	2.0804	18 28 1.5	0.363
20	18 29 11.83	2.0800	18 27 37.2	0.448
21	18 31 16.62	2.0796	18 27 7.7	0.533
22	18 33 21.38	2.0792	18 26 33.2	0.618
23	18 35 26.11	2.0787	18 25 53.6	0.703
24	18 37 30.82	2.0783	S.18 25 8.9	0.788

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 37 30.82	2.0783	S. 18 25 8.9	0.788
1	18 39 35.50	2.0778	18 24 19.1	0.872
2	18 41 40.15	2.0773	18 23 24.3	0.957
3	18 43 44.77	2.0768	18 22 24.4	1.041
4	18 45 49.37	2.0763	18 21 19.4	1.125
5	18 47 53.94	2.0758	18 20 9.4	1.209
6	18 49 58.47	2.0753	18 18 54.3	1.293
7	18 52 2.97	2.0748	18 17 34.2	1.377
8	18 54 7.44	2.0743	18 16 9.0	1.461
9	18 56 11.88	2.0738	18 14 38.8	1.544
10	18 58 16.29	2.0733	18 13 3.6	1.628
11	19 0 20.67	2.0727	18 11 23.4	1.712
12	19 2 25.01	2.0722	18 9 38.1	1.796
13	19 4 29.32	2.0716	18 7 47.8	1.879
14	19 6 33.60	2.0711	18 5 52.6	1.963
15	19 8 37.85	2.0705	18 3 52.3	2.046
16	19 10 42.06	2.0699	18 1 47.1	2.129
17	19 12 46.24	2.0693	17 59 36.9	2.211
18	19 14 50.38	2.0688	17 57 21.8	2.294
19	19 16 54.49	2.0683	17 55 1.7	2.377
20	19 18 58.57	2.0677	17 52 36.6	2.459
21	19 21 2.61	2.0671	17 50 6.6	2.541
22	19 23 6.62	2.0665	17 47 31.7	2.623
23	19 25 10.59	2.0659	S. 17 44 51.9	2.704

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 27 14.52	2.0653	S. 17 42 7.2	2.786
1	19 29 18.42	2.0648	17 39 17.6	2.867
2	19 31 22.29	2.0642	17 36 23.1	2.949
3	19 33 26.12	2.0636	17 33 23.7	3.030
4	19 35 29.91	2.0629	17 30 19.5	3.111
5	19 37 33.67	2.0623	17 27 10.4	3.192
6	19 39 37.39	2.0618	17 23 56.5	3.273
7	19 41 41.08	2.0612	17 20 37.7	3.353
8	19 43 44.73	2.0606	17 17 14.2	3.432
9	19 45 48.35	2.0600	17 13 45.8	3.511
10	19 47 51.93	2.0594	17 10 12.7	3.591
11	19 49 55.47	2.0588	17 6 34.8	3.670
12	19 51 58.98	2.0582	17 2 52.2	3.749
13	19 54 2.45	2.0576	16 59 4.8	3.829
14	19 56 5.89	2.0570	16 55 12.7	3.908
15	19 58 9.29	2.0563	16 51 15.8	3.987
16	20 0 12.65	2.0557	16 47 14.2	4.066
17	20 2 15.98	2.0552	16 43 7.9	4.144
18	20 4 19.27	2.0546	16 38 56.9	4.222
19	20 6 22.53	2.0540	16 34 41.3	4.299
20	20 8 25.75	2.0534	16 30 21.0	4.377
21	20 10 28.94	2.0528	16 25 56.1	4.454
22	20 12 32.09	2.0523	16 21 26.5	4.531
23	20 14 35.21	2.0517	16 16 52.3	4.608
24	20 16 38.29	2.0511	S. 16 12 13.6	4.684

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 16 38.29	2.0511	S. 16 12 13.6	4.684
1	20 18 41.34	2.0506	16 7 30.3	4.760
2	20 20 44.36	2.0500	16 2 42.4	4.836
3	20 22 47.34	2.0494	15 57 50.0	4.912
4	20 24 50.29	2.0488	15 52 53.0	4.987
5	20 26 53.21	2.0483	15 47 51.5	5.062
6	20 28 56.09	2.0478	15 42 45.6	5.137
7	20 30 58.94	2.0473	15 37 35.1	5.212
8	20 33 1.76	2.0468	15 32 20.2	5.286
9	20 35 4.55	2.0463	15 27 0.8	5.360
10	20 37 7.31	2.0458	15 21 37.0	5.434
11	20 39 10.04	2.0453	15 16 8.8	5.507
12	20 41 12.74	2.0448	15 10 36.2	5.580
13	20 43 15.41	2.0443	15 4 59.2	5.653
14	20 45 18.06	2.0438	14 59 17.9	5.725
15	20 47 20.67	2.0433	14 53 32.2	5.797
16	20 49 23.26	2.0429	14 47 42.3	5.869
17	20 51 25.82	2.0425	14 41 48.0	5.940
18	20 53 28.36	2.0420	14 35 49.5	6.011
19	20 55 30.87	2.0416	14 29 46.8	6.081
20	20 57 33.35	2.0412	14 23 39.8	6.152
21	20 59 35.81	2.0408	14 17 28.6	6.222
22	21 1 38.25	2.0404	14 11 13.2	6.291
23	21 3 40.67	2.0400	S. 14 4 53.7	6.360

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 5 43.06	2.0396	S. 13 58 30.0	6.429
1	21 7 45.43	2.0393	13 52 2.2	6.498
2	21 9 47.78	2.0390	13 45 30.2	6.566
3	21 11 50.11	2.0388	13 38 54.2	6.634
4	21 13 52.43	2.0385	13 32 14.1	6.702
5	21 15 54.73	2.0382	13 25 30.0	6.769
6	21 17 57.01	2.0379	13 18 41.8	6.836
7	21 19 59.27	2.0376	13 11 49.6	6.903
8	21 22 1.52	2.0374	13 4 53.5	6.969
9	21 24 3.76	2.0372	12 57 53.4	7.034
10	21 26 5.98	2.0370	12 50 49.4	7.100
11	21 28 8.19	2.0368	12 43 41.4	7.165
12	21 30 10.39	2.0366	12 36 29.6	7.229
13	21 32 12.58	2.0364	12 29 14.0	7.293
14	21 34 14.76	2.0363	12 21 54.5	7.357
15	21 36 16.93	2.0362	12 14 31.2	7.420
16	21 38 19.10	2.0361	12 7 4.1	7.483
17	21 40 21.26	2.0360	11 59 33.3	7.545
18	21 42 23.42	2.0360	11 51 58.7	7.607
19	21 44 25.58	2.0359	11 44 20.5	7.668
20	21 46 27.73	2.0359	11 36 38.6	7.729
21	21 48 29.88	2.0358	11 28 53.1	7.789
22	21 50 32.03	2.0358	11 21 3.9	7.849
23	21 52 34.18	2.0359	11 13 11.2	7.908
24	21 54 36.34	2.0360	S. 11 5 14.9	7.967

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 54 36.34	2.0360	S. 11 5 14.9	7.967
1	21 56 38.50	2.0361	10 57 15.1	8.026
2	21 58 40.67	2.0362	10 49 11.7	8.084
3	22 0 42.84	2.0363	10 41 4.9	8.142
4	22 2 45.02	2.0364	10 32 54.7	8.200
5	22 4 47.21	2.0366	10 24 41.0	8.257
6	22 6 49.41	2.0368	10 16 23.9	8.313
7	22 8 51.62	2.0370	10 8 3.5	8.368
8	22 10 53.85	2.0372	9 59 39.7	8.423
9	22 12 56.09	2.0374	9 51 12.7	8.478
10	22 14 58.34	2.0377	9 42 42.3	8.532
11	22 17 0.61	2.0381	9 34 8.8	8.586
12	22 19 2.91	2.0384	9 25 32.0	8.639
13	22 21 5.22	2.0388	9 16 52.1	8.692
14	22 23 7.56	2.0392	9 8 9.0	8.744
15	22 25 9.92	2.0396	8 59 22.8	8.795
16	22 27 12.31	2.0400	8 50 33.6	8.846
17	22 29 14.72	2.0404	8 41 41.3	8.896
18	22 31 17.16	2.0409	8 32 46.1	8.946
19	22 33 19.63	2.0415	8 23 47.9	8.995
20	22 35 22.14	2.0420	8 14 46.7	9.044
21	22 37 24.68	2.0426	8 5 42.6	9.092
22	22 39 27.25	2.0432	7 56 35.7	9.139
23	22 41 29.86	2.0438	S. 7 47 25.9	9.186

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 43 32.51	2.0445	S. 7 38 13.4	9.232
1	22 45 35.20	2.0452	7 28 58.1	9.278
2	22 47 37.93	2.0459	7 19 40.1	9.323
3	22 49 40.70	2.0466	7 10 19.4	9.368
4	22 51 43.52	2.0474	7 0 56.0	9.411
5	22 53 46.38	2.0482	6 51 30.0	9.454
6	22 55 49.30	2.0490	6 42 1.5	9.497
7	22 57 52.27	2.0499	6 32 30.4	9.539
8	22 59 55.29	2.0508	6 22 56.8	9.580
9	23 1 58.36	2.0517	6 13 20.7	9.621
10	23 4 1.49	2.0527	6 3 42.3	9.661
11	23 6 4.68	2.0537	5 54 1.5	9.699
12	23 8 7.93	2.0547	5 44 18.3	9.737
13	23 10 11.24	2.0557	5 34 32.9	9.775
14	23 12 14.61	2.0567	5 24 45.2	9.812
15	23 14 18.05	2.0578	5 14 55.3	9.849
16	23 16 21.55	2.0590	5 5 3.2	9.884
17	23 18 25.12	2.0602	4 55 9.0	9.920
18	23 20 28.77	2.0614	4 45 12.8	9.954
19	23 22 32.49	2.0626	4 35 14.5	9.988
20	23 24 36.28	2.0639	4 25 14.3	10.020
21	23 26 40.15	2.0652	4 15 12.1	10.052
22	23 28 44.10	2.0665	4 5 8.1	10.083
23	23 30 48.13	2.0678	3 55 2.2	10.114
24	23 32 52.24	2.0692	S. 3 44 54.4	10.144

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 32 52.24	2.0692	S. 3 44 54.4	10.144
1	23 34 56.44	2.0707	3 34 44.9	10.173
2	23 37 0.72	2.0722	3 24 33.7	10.201
3	23 39 5.09	2.0737	3 14 20.8	10.228
4	23 41 9.56	2.0752	3 4 6.3	10.255
5	23 43 14.12	2.0768	2 53 50.2	10.281
6	23 45 18.77	2.0783	2 43 32.5	10.306
7	23 47 23.52	2.0799	2 33 13.4	10.331
8	23 49 28.36	2.0816	2 22 52.8	10.355
9	23 51 33.31	2.0833	2 12 30.9	10.377
10	23 53 38.36	2.0850	2 2 7.6	10.399
11	23 55 43.51	2.0868	1 51 43.0	10.420
12	23 57 48.77	2.0886	1 41 17.2	10.440
13	23 59 54.14	2.0904	1 30 50.2	10.459
14	0 1 59.62	2.0923	1 20 22.1	10.477
15	0 4 5.21	2.0942	1 9 53.0	10.494
16	0 6 10.92	2.0961	0 59 22.8	10.511
17	0 8 16.75	2.0981	0 48 51.7	10.527
18	0 10 22.69	2.1001	0 38 19.6	10.542
19	0 12 28.75	2.1021	0 27 46.7	10.556
20	0 14 34.94	2.1042	0 17 13.0	10.568
21	0 16 41.25	2.1063	S. 0 6 38.5	10.580
22	0 18 47.69	2.1084	N. 0 3 56.6	10.591
23	0 20 54.26	2.1106	N. 0 14 32.4	10.601

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 23 0.96	2.1128	N. 0 25 8.7	10.611
1	0 25 7.79	2.1150	0 35 45.6	10.619
2	0 27 14.76	2.1172	0 46 23.0	10.627
3	0 29 21.86	2.1195	0 57 0.8	10.633
4	0 31 29.10	2.1218	1 7 38.9	10.638
5	0 33 36.48	2.1242	1 18 17.3	10.643
6	0 35 44.00	2.1266	1 28 56.0	10.646
7	0 37 51.67	2.1291	1 39 34.9	10.649
8	0 39 59.49	2.1315	1 50 13.9	10.651
9	0 42 7.45	2.1340	2 0 53.0	10.652
10	0 44 15.57	2.1366	2 11 32.1	10.651
11	0 46 23.84	2.1392	2 22 11.1	10.649
12	0 48 32.27	2.1417	2 32 50.0	10.646
13	0 50 40.85	2.1443	2 43 28.7	10.643
14	0 52 49.59	2.1470	2 54 7.2	10.639
15	0 54 58.49	2.1498	3 4 45.4	10.633
16	0 57 7.56	2.1525	3 15 23.2	10.626
17	0 59 16.79	2.1552	3 26 0.6	10.619
18	1 1 26.18	2.1580	3 36 37.5	10.610
19	1 3 35.74	2.1608	3 47 13.8	10.600
20	1 5 45.47	2.1636	3 57 49.5	10.589
21	1 7 55.37	2.1664	4 8 24.5	10.577
22	1 10 5.44	2.1693	4 18 58.8	10.564
23	1 12 15.69	2.1723	4 29 32.2	10.550
24	1 14 26.12	2.1753	N. 4 40 4.8	10.536

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 14 26.12	2.1753	N. 4 40 4.8	10.535
1	1 16 36.72	2.1783	4 50 36.4	10.519
2	1 18 47.51	2.1813	5 1 7.1	10.502
3	1 20 58.48	2.1843	5 11 36.7	10.483
4	1 23 9.63	2.1873	5 22 5.1	10.464
5	1 25 20.96	2.1904	5 32 32.3	10.443
6	1 27 32.48	2.1935	5 42 58.2	10.421
7	1 29 44.18	2.1967	5 53 22.8	10.398
8	1 31 56.08	2.1999	6 3 46.0	10.374
9	1 34 8.17	2.2031	6 14 7.7	10.349
10	1 36 20.45	2.2063	6 24 27.9	10.323
11	1 38 32.92	2.2095	6 34 46.4	10.296
12	1 40 45.59	2.2128	6 45 3.3	10.266
13	1 42 58.46	2.2161	6 55 18.4	10.237
14	1 45 11.52	2.2194	7 5 31.7	10.206
15	1 47 24.78	2.2227	7 15 43.1	10.174
16	1 49 38.24	2.2260	7 25 52.6	10.141
17	1 51 51.90	2.2294	7 36 0.0	10.106
18	1 54 5.77	2.2328	7 46 5.3	10.070
19	1 56 19.84	2.2362	7 56 8.4	10.033
20	1 58 34.11	2.2396	8 6 9.3	9.996
21	2 0 48.59	2.2430	8 16 7.9	9.957
22	2 3 3.27	2.2465	8 26 4.1	9.917
23	2 5 18.16	2.2500	N. 8 35 57.9	9.876

MONDAY 14.

Hour	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 7 33.27	2.2535	N. 8 45 49.1	9.832
1	2 9 48.58	2.2570	8 55 37.7	9.788
2	2 12 4.11	2.2605	9 5 23.7	9.743
3	2 14 19.84	2.2640	9 15 7.0	9.697
4	2 16 35.79	2.2676	9 24 47.4	9.650
5	2 18 51.95	2.2711	9 34 25.0	9.602
6	2 21 8.32	2.2747	9 43 59.6	9.552
7	2 23 24.91	2.2783	9 53 31.2	9.501
8	2 25 41.71	2.2818	10 2 59.7	9.449
9	2 27 58.73	2.2854	10 12 25.0	9.396
10	2 30 15.96	2.2890	10 21 47.2	9.341
11	2 32 33.41	2.2927	10 31 6.1	9.286
12	2 34 51.08	2.2962	10 40 21.5	9.229
13	2 37 8.96	2.2998	10 49 33.5	9.172
14	2 39 27.06	2.3034	10 58 42.1	9.113
15	2 41 45.37	2.3070	11 7 47.0	9.052
16	2 44 3.90	2.3106	11 16 48.3	8.990
17	2 46 22.65	2.3143	11 25 45.8	8.928
18	2 48 41.62	2.3179	11 34 39.6	8.864
19	2 51 0.80	2.3215	11 43 29.5	8.799
20	2 53 20.20	2.3251	11 52 15.5	8.733
21	2 55 39.82	2.3288	12 0 57.5	8.666
22	2 57 59.65	2.3324	12 9 35.4	8.598
23	3 0 19.70	2.3360	12 18 9.2	8.528
24	3 2 39.97	2.3396	N.12 26 38.7	8.457

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 2 39.97	2.3396	N.12 26 38.7	8.457
1	3 5 0.45	2.3431	12 35 3.9	8.385
2	3 7 21.14	2.3467	12 43 24.8	8.312
3	3 9 42.05	2.3503	12 51 41.3	8.238
4	3 12 3.17	2.3538	12 59 53.3	8.163
5	3 14 24.50	2.3573	13 8 0.8	8.086
6	3 16 46.05	2.3608	13 16 3.6	8.008
7	3 19 7.80	2.3643	13 24 1.7	7.929
8	3 21 29.77	2.3678	13 31 55.1	7.849
9	3 23 51.95	2.3713	13 39 43.6	7.769
10	3 26 14.33	2.3748	13 47 27.3	7.686
11	3 28 36.92	2.3783	13 55 6.1	7.603
12	3 30 59.72	2.3817	14 2 39.8	7.519
13	3 33 22.72	2.3851	14 10 8.4	7.434
14	3 35 45.93	2.3885	14 17 31.9	7.348
15	3 38 9.33	2.3918	14 24 50.2	7.261
16	3 40 32.94	2.3951	14 32 3.3	7.173
17	3 42 56.75	2.3984	14 39 11.0	7.083
18	3 45 20.75	2.4016	14 46 13.3	6.993
19	3 47 44.94	2.4048	14 53 10.1	6.903
20	3 50 9.33	2.4081	15 0 1.5	6.810
21	3 52 33.91	2.4113	15 6 47.3	6.716
22	3 54 58.68	2.4144	15 13 27.4	6.622
23	3 57 23.64	2.4175	N.15 20 1.9	6.527

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 59 48.78	2.4206	N.15 26 30.6	6.431
1	4 2 14.10	2.4236	15 32 53.5	6.333
2	4 4 39.61	2.4266	15 39 10.6	6.235
3	4 7 5.30	2.4296	15 45 21.7	6.136
4	4 9 31.16	2.4325	15 51 26.9	6.036
5	4 11 57.19	2.4353	15 57 26.0	5.935
6	4 14 23.40	2.4382	16 3 19.1	5.833
7	4 16 49.78	2.4410	16 9 6.0	5.731
8	4 19 16.32	2.4437	16 14 46.8	5.628
9	4 21 43.02	2.4464	16 20 21.3	5.523
10	4 24 9.89	2.4491	16 25 49.6	5.418
11	4 26 36.91	2.4517	16 31 11.5	5.312
12	4 29 4.09	2.4542	16 36 27.0	5.205
13	4 31 31.42	2.4567	16 41 36.1	5.098
14	4 33 58.89	2.4592	16 46 38.7	4.990
15	4 36 26.51	2.4616	16 51 34.8	4.881
16	4 38 54.28	2.4639	16 56 24.4	4.771
17	4 41 22.18	2.4662	17 1 7.3	4.660
18	4 43 50.22	2.4684	17 5 43.6	4.549
19	4 46 18.39	2.4706	17 10 13.2	4.438
20	4 48 46.69	2.4727	17 14 36.1	4.326
21	4 51 15.12	2.4748	17 18 52.2	4.212
22	4 53 43.67	2.4768	17 23 1.5	4.098
23	4 56 12.34	2.4788	17 27 3.9	3.983
24	4 58 41.12	2.4807	N.17 30 59.5	3.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 58 41.12	2.4807	N.17 30 59.5	3.868
1	5 1 10.02	2.4825	17 34 48.2	3.753
2	5 3 39.02	2.4842	17 38 29.9	3.637
3	5 6 8.13	2.4859	17 42 4.6	3.520
4	5 8 37.33	2.4875	17 45 32.3	3.403
5	5 11 6.63	2.4891	17 48 53.0	3.286
6	5 13 36.02	2.4906	17 52 6.6	3.167
7	5 16 5.50	2.4920	17 55 13.1	3.048
8	5 18 35.06	2.4934	17 58 12.4	2.929
9	5 21 4.70	2.4947	18 1 4.6	2.810
10	5 23 34.42	2.4959	18 3 49.6	2.690
11	5 26 4.21	2.4971	18 6 27.4	2.570
12	5 28 34.07	2.4982	18 8 58.0	2.449
13	5 31 3.99	2.4992	18 11 21.3	2.328
14	5 33 33.97	2.5001	18 13 37.4	2.207
15	5 36 4.00	2.5010	18 15 46.2	2.085
16	5 38 34.09	2.5018	18 17 47.6	1.963
17	5 41 4.22	2.5025	18 19 41.7	1.841
18	5 43 34.39	2.5032	18 21 28.5	1.719
19	5 46 4.60	2.5038	18 23 7.9	1.596
20	5 48 34.84	2.5043	18 24 40.0	1.473
21	5 51 5.11	2.5048	18 26 4.7	1.350
22	5 53 35.41	2.5051	18 27 22.0	1.227
23	5 56 5.73	2.5054	N.18 28 31.9	1.103

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 58 36.06	2.5055	N.18 29 34.4	0.980
1	6 1 6.40	2.5058	18 30 29.5	0.856
2	6 3 36.75	2.5059	18 31 17.1	0.733
3	6 6 7.11	2.5060	18 31 57.4	0.609
4	6 8 37.46	2.5059	18 32 30.2	0.485
5	6 11 7.81	2.5057	18 32 55.6	0.361
6	6 13 38.14	2.5055	18 33 13.5	0.237
7	6 16 8.46	2.5053	18 33 24.0	0.113
8	6 18 38.77	2.5049	18 33 27.1	0.011
9	6 21 9.05	2.5044	18 33 22.8	0.134
10	6 23 39.30	2.5039	18 33 11.0	0.258
11	6 26 9.52	2.5033	18 32 51.8	0.382
12	6 28 39.70	2.5026	18 32 25.2	0.506
13	6 31 9.84	2.5019	18 31 51.2	0.630
14	6 33 39.93	2.5011	18 31 9.8	0.751
15	6 36 9.98	2.5002	18 30 21.0	0.874
16	6 38 39.97	2.4993	18 29 24.9	0.997
17	6 41 9.90	2.4983	18 28 21.4	1.119
18	6 43 39.77	2.4973	18 27 10.6	1.242
19	6 46 9.58	2.4962	18 25 52.4	1.364
20	6 48 39.31	2.4950	18 24 26.9	1.486
21	6 51 8.97	2.4937	18 22 54.1	1.607
22	6 53 38.55	2.4923	18 21 14.1	1.728
23	6 56 8.05	2.4909	18 19 26.8	1.849
24	6 58 37.46	2.4896	N.18 17 32.2	1.970

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 58 37.46	2.4896	N.18 17 32.2	1.970
1	7 1 6.79	2.4880	18 15 30.3	2.090
2	7 3 36.02	2.4864	18 13 21.3	2.210
3	7 6 5.15	2.4847	18 11 5.1	2.329
4	7 8 34.18	2.4830	18 8 41.8	2.448
5	7 11 3.10	2.4812	18 6 11.3	2.567
6	7 13 31.92	2.4794	18 3 33.8	2.686
7	7 16 0.63	2.4775	18 0 49.2	2.803
8	7 18 29.22	2.4755	17 57 57.5	2.920
9	7 20 57.69	2.4735	17 54 58.8	3.037
10	7 23 26.04	2.4714	17 51 53.1	3.153
11	7 25 54.26	2.4693	17 48 40.5	3.268
12	7 28 22.35	2.4671	17 45 21.0	3.383
13	7 30 50.31	2.4648	17 41 54.6	3.497
14	7 33 18.13	2.4626	17 38 21.3	3.611
15	7 35 45.82	2.4603	17 34 41.2	3.724
16	7 38 13.36	2.4579	17 30 54.4	3.837
17	7 40 40.76	2.4554	17 27 0.8	3.949
18	7 43 8.01	2.4529	17 23 0.5	4.061
19	7 45 35.11	2.4504	17 18 53.5	4.172
20	7 48 2.06	2.4478	17 14 39.9	4.282
21	7 50 28.85	2.4452	17 10 19.7	4.391
22	7 52 55.49	2.4425	17 5 53.0	4.500
23	7 55 21.96	2.4398	N.17 1 19.8	4.608

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 57 48.27	2.4371	N.16 56 40.1	4.716
1	8 0 14.41	2.4343	16 51 54.0	4.822
2	8 2 40.39	2.4315	16 47 1.5	4.928
3	8 5 6.19	2.4286	16 42 2.7	5.033
4	8 7 31.82	2.4257	16 36 57.6	5.137
5	8 9 57.27	2.4228	16 31 46.2	5.241
6	8 12 22.55	2.4198	16 26 28.7	5.344
7	8 14 47.65	2.4168	16 21 5.0	5.446
8	8 17 12.57	2.4138	16 15 35.2	5.547
9	8 19 37.31	2.4108	16 9 59.3	5.647
10	8 22 1.86	2.4077	16 4 17.5	5.746
11	8 24 26.22	2.4045	15 58 29.7	5.845
12	8 26 50.40	2.4014	15 52 36.1	5.943
13	8 29 14.39	2.3982	15 46 36.6	6.040
14	8 31 38.18	2.3950	15 40 31.3	6.136
15	8 34 1.79	2.3918	15 34 20.2	6.231
16	8 36 25.20	2.3886	15 28 3.5	6.326
17	8 38 48.42	2.3853	15 21 41.1	6.419
18	8 41 11.44	2.3821	15 15 13.2	6.511
19	8 43 34.26	2.3788	15 8 39.7	6.603
20	8 45 56.89	2.3755	15 2 0.8	6.693
21	8 48 19.32	2.3722	14 55 16.5	6.783
22	8 50 41.55	2.3690	14 48 26.8	6.873
23	8 53 3.58	2.3657	14 41 31.8	6.960
24	8 55 25.41	2.3623	N.14 34 31.6	7.047

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 55 25.41	2.3623	N.14 34 31.6	7.047
1	8 57 47.04	2.3588	14 27 26.2	7.133
2	9 0 8.46	2.3554	14 20 15.6	7.218
3	9 2 29.68	2.3520	14 13 0.0	7.302
4	9 4 50.70	2.3487	14 5 39.4	7.385
5	9 7 11.52	2.3453	13 58 13.8	7.468
6	9 9 32.13	2.3419	13 50 43.3	7.549
7	9 11 52.54	2.3384	13 43 7.9	7.629
8	9 14 12.74	2.3350	13 35 27.8	7.708
9	9 16 32.74	2.3316	13 27 42.9	7.787
10	9 18 52.53	2.3282	13 19 53.4	7.864
11	9 21 12.12	2.3248	13 11 59.3	7.940
12	9 23 31.50	2.3214	13 4 0.6	8.015
13	9 25 50.68	2.3179	12 55 57.5	8.089
14	9 28 9.65	2.3145	12 47 49.9	8.162
15	9 30 28.42	2.3112	12 39 38.0	8.235
16	9 32 46.99	2.3077	12 31 21.7	8.306
17	9 35 5.35	2.3043	12 23 1.2	8.377
18	9 37 23.51	2.3010	12 14 36.5	8.446
19	9 39 41.47	2.2977	12 6 7.7	8.513
20	9 41 59.23	2.2943	11 57 34.9	8.580
21	9 44 16.79	2.2909	11 48 58.1	8.647
22	9 46 34.14	2.2876	11 40 17.3	8.712
23	9 48 51.29	2.2843	N.11 31 32.7	8.775

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 51 8.25	2.2810	N.11 22 44.3	8.838
1	9 53 25.01	2.2777	11 13 52.1	8.900
2	9 55 41.57	2.2744	11 4 56.3	8.961
3	9 57 57.93	2.2711	10 55 56.8	9.021
4	10 0 14.10	2.2679	10 46 53.8	9.081
5	10 2 30.08	2.2647	10 37 47.3	9.138
6	10 4 45.86	2.2614	10 28 37.3	9.194
7	10 7 1.45	2.2582	10 19 24.0	9.249
8	10 9 16.84	2.2550	10 10 7.4	9.303
9	10 11 32.05	2.2519	10 0 47.5	9.357
10	10 13 47.07	2.2487	9 51 24.5	9.409
11	10 16 1.90	2.2456	9 41 58.4	9.461
12	10 18 16.54	2.2425	9 32 29.2	9.511
13	10 20 31.00	2.2394	9 22 57.0	9.561
14	10 22 45.27	2.2364	9 13 21.9	9.609
15	10 24 59.37	2.2334	9 3 43.9	9.656
16	10 27 13.28	2.2304	8 54 3.2	9.702
17	10 29 27.01	2.2274	8 44 19.7	9.747
18	10 31 40.57	2.2245	8 34 33.6	9.791
19	10 33 53.95	2.2216	8 24 44.8	9.834
20	10 36 7.16	2.2187	8 14 53.5	9.876
21	10 38 20.19	2.2158	8 4 59.7	9.917
22	10 40 33.05	2.2130	7 55 3.5	9.957
23	10 42 45.74	2.2102	7 45 4.9	9.996
24	10 44 58.27	2.2074	N. 7 35 4.1	10.032

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 44 58.27	2.2074	N. 7 35 4.1	10.032
1	10 47 10.63	2.2046	7 25 1.0	10.069
2	10 49 22.82	2.2019	7 14 55.8	10.108
3	10 51 34.85	2.1992	7 4 48.4	10.140
4	10 53 46.72	2.1965	6 54 39.0	10.174
5	10 55 58.43	2.1938	6 44 27.6	10.206
6	10 58 9.98	2.1912	6 34 14.3	10.237
7	11 0 21.38	2.1887	6 23 59.1	10.268
8	11 2 32.62	2.1862	6 13 42.2	10.297
9	11 4 43.72	2.1837	6 3 23.5	10.325
10	11 6 54.66	2.1812	5 53 3.2	10.352
11	11 9 5.45	2.1787	5 42 41.2	10.379
12	11 11 16.10	2.1762	5 32 17.7	10.404
13	11 13 26.60	2.1738	5 21 52.7	10.428
14	11 15 36.96	2.1715	5 11 26.3	10.451
15	11 17 47.18	2.1692	5 0 58.5	10.473
16	11 19 57.26	2.1669	4 50 29.5	10.494
17	11 22 7.21	2.1647	4 39 59.2	10.514
18	11 24 17.02	2.1625	4 29 27.8	10.533
19	11 26 26.70	2.1603	4 18 55.2	10.552
20	11 28 36.25	2.1581	4 8 21.6	10.569
21	11 30 45.67	2.1560	3 57 47.0	10.585
22	11 32 54.97	2.1539	3 47 11.4	10.600
23	11 35 4.14	2.1518	N. 3 36 35.0	10.613

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 37 13.19	2.1498	N. 3 25 57.8	10.626
1	11 39 22.12	2.1479	3 15 19.8	10.638
2	11 41 30.94	2.1459	3 4 41.2	10.649
3	11 43 39.64	2.1440	2 54 1.9	10.660
4	11 45 48.22	2.1421	2 43 22.0	10.669
5	11 47 56.70	2.1403	2 32 41.6	10.677
6	11 50 5.06	2.1385	2 22 0.8	10.684
7	11 52 13.31	2.1367	2 11 19.6	10.689
8	11 54 21.46	2.1350	2 0 38.1	10.694
9	11 56 29.51	2.1333	1 49 56.3	10.698
10	11 58 37.45	2.1316	1 39 14.3	10.701
11	12 0 45.30	2.1300	1 28 32.1	10.703
12	12 2 53.05	2.1284	1 17 49.9	10.704
13	12 5 0.70	2.1268	1 7 7.6	10.705
14	12 7 8.26	2.1253	0 56 25.3	10.704
15	12 9 15.73	2.1238	0 45 43.1	10.703
16	12 11 23.11	2.1223	0 35 1.1	10.699
17	12 13 30.40	2.1208	0 24 19.3	10.696
18	12 15 37.61	2.1195	0 13 37.7	10.690
19	12 17 44.74	2.1182	N. 0 2 56.4	10.685
20	12 19 51.79	2.1168	S. 0 7 44.5	10.679
21	12 21 58.76	2.1156	0 18 25.0	10.671
22	12 24 5.65	2.1143	0 29 5.0	10.662
23	12 26 12.47	2.1131	0 39 44.5	10.653
24	12 28 19.22	2.1119	S. 0 50 23.4	10.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 28 19.22	2.1119	S. 0 50 23.4	10.643
1	12 30 25.90	2.1108	1 1 1.6	10.631
2	12 32 32.52	2.1097	1 11 39.2	10.619
3	12 34 39.07	2.1086	1 22 16.0	10.606
4	12 36 45.55	2.1076	1 32 51.9	10.592
5	12 38 51.97	2.1065	1 43 27.0	10.578
6	12 40 58.33	2.1055	1 54 1.2	10.562
7	12 43 4.63	2.1046	2 4 34.4	10.545
8	12 45 10.88	2.1037	2 15 6.5	10.527
9	12 47 17.07	2.1028	2 25 37.6	10.508
10	12 49 23.21	2.1019	2 36 7.5	10.488
11	12 51 29.30	2.1010	2 46 36.3	10.467
12	12 53 35.33	2.1002	2 57 3.8	10.445
13	12 55 41.32	2.0994	3 7 30.0	10.423
14	12 57 47.26	2.0986	3 17 54.9	10.400
15	12 59 53.16	2.0979	3 28 18.3	10.377
16	13 1 59.01	2.0972	3 38 40.3	10.353
17	13 4 4.82	2.0966	3 49 0.8	10.328
18	13 6 10.60	2.0959	3 59 19.7	10.302
19	13 8 16.34	2.0953	4 9 37.0	10.274
20	13 10 22.04	2.0948	4 19 52.6	10.246
21	13 12 27.71	2.0943	4 30 6.5	10.217
22	13 14 33.35	2.0938	4 40 18.6	10.187
23	13 16 38.96	2.0933	S. 4 50 28.9	10.157

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 18 44.54	2.0928	S. 5 0 37.4	10.126
1	13 20 50.09	2.0923	5 10 43.9	10.092
2	13 22 55.62	2.0919	5 20 48.5	10.059
3	13 25 1.12	2.0915	5 30 51.0	10.025
4	13 27 6.60	2.0911	5 40 51.5	9.990
5	13 29 12.06	2.0908	5 50 49.9	9.956
6	13 31 17.50	2.0905	6 0 46.1	9.919
7	13 33 22.92	2.0903	6 10 40.1	9.881
8	13 35 28.33	2.0900	6 20 31.8	9.843
9	13 37 33.72	2.0898	6 30 21.2	9.804
10	13 39 39.10	2.0895	6 40 8.3	9.764
11	13 41 44.47	2.0893	6 49 53.0	9.724
12	13 43 49.82	2.0891	6 59 35.2	9.683
13	13 45 55.16	2.0890	7 9 14.9	9.641
14	13 48 0.50	2.0889	7 18 52.1	9.598
15	13 50 5.83	2.0888	7 28 26.7	9.555
16	13 52 11.16	2.0887	7 37 58.7	9.510
17	13 54 16.48	2.0887	7 47 28.0	9.465
18	13 56 21.80	2.0886	7 56 54.5	9.419
19	13 58 27.11	2.0885	8 6 18.3	9.373
20	14 0 32.42	2.0885	8 15 39.3	9.326
21	14 2 37.73	2.0886	8 24 57.4	9.277
22	14 4 43.05	2.0886	8 34 12.6	9.229
23	14 6 48.36	2.0886	8 43 24.9	9.180
24	14 8 53.68	2.0887	S. 8 52 34.2	9.130

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 8 53.68	2.0887	S. 8 52 34.2	9.130
1	14 10 59.00	2.0888	9 1 40.5	9.079
2	14 13 4.33	2.0889	9 10 43.7	9.027
3	14 15 9.66	2.0889	9 19 43.8	8.975
4	14 17 15.00	2.0891	9 28 40.7	8.922
5	14 19 20.35	2.0893	9 37 34.5	8.869
6	14 21 25.71	2.0894	9 46 25.0	8.815
7	14 23 31.07	2.0896	9 55 12.3	8.760
8	14 25 36.45	2.0897	10 3 56.2	8.704
9	14 27 41.84	2.0899	10 12 36.8	8.648
10	14 29 47.24	2.0901	10 21 14.0	8.591
11	14 31 52.65	2.0903	10 29 47.8	8.534
12	14 33 58.08	2.0905	10 38 18.1	8.476
13	14 36 3.52	2.0908	10 46 44.9	8.418
14	14 38 8.97	2.0910	10 55 8.2	8.359
15	14 40 14.44	2.0913	11 3 27.9	8.298
16	14 42 19.93	2.0916	11 11 43.9	8.237
17	14 44 25.43	2.0918	11 19 56.3	8.176
18	14 46 30.95	2.0921	11 28 5.0	8.114
19	14 48 36.49	2.0924	11 36 10.0	8.052
20	14 50 42.04	2.0927	11 44 11.2	7.989
21	14 52 47.61	2.0930	11 52 8.6	7.926
22	14 54 53.20	2.0933	12 0 2.2	7.861
23	14 56 58.81	2.0937	S. 12 7 51.9	7.796

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 59 4.44	2.0940	S. 12 15 37.7	7.731
1	15 1 10.09	2.0943	12 23 19.6	7.665
2	15 3 15.75	2.0946	12 30 57.5	7.599
3	15 5 21.43	2.0949	12 38 31.4	7.532
4	15 7 27.14	2.0952	12 46 1.3	7.465
5	15 9 32.86	2.0956	12 53 27.1	7.397
6	15 11 38.61	2.0959	13 0 48.9	7.328
7	15 13 44.38	2.0963	13 8 6.5	7.259
8	15 15 50.17	2.0966	13 15 20.0	7.190
9	15 17 55.98	2.0970	13 22 29.3	7.120
10	15 20 1.81	2.0973	13 29 34.4	7.049
11	15 22 7.66	2.0977	13 36 35.2	6.978
12	15 24 13.53	2.0980	13 43 31.8	6.907
13	15 26 19.42	2.0983	13 50 24.1	6.835
14	15 28 25.33	2.0987	13 57 12.0	6.763
15	15 30 31.26	2.0991	14 3 55.6	6.690
16	15 32 37.22	2.0994	14 10 34.8	6.617
17	15 34 43.20	2.0998	14 17 9.6	6.543
18	15 36 49.19	2.1000	14 23 39.9	6.469
19	15 38 55.20	2.1003	14 30 5.7	6.394
20	15 41 1.23	2.1006	14 36 27.1	6.319
21	15 43 7.28	2.1010	14 42 44.0	6.243
22	15 45 13.35	2.1014	14 48 56.3	6.167
23	15 47 19.44	2.1017	14 55 4.0	6.091
24	15 49 25.55	2.1020	S. 15 1 7.2	6.015

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 49 25.55	2.1020	S. 15 1 7.2	6.016
1	15 51 31.68	2.1023	15 7 5.8	5.938
2	15 53 37.82	2.1026	15 12 59.7	5.861
3	15 55 43.98	2.1028	15 18 49.0	5.783
4	15 57 50.16	2.1031	15 24 33.6	5.705
5	15 59 56.35	2.1033	15 30 13.5	5.626
6	16 2 2.56	2.1036	15 35 48.7	5.547
7	16 4 8.79	2.1039	15 41 19.2	5.468
8	16 6 15.03	2.1041	15 46 44.9	5.388
9	16 8 21.28	2.1043	15 52 5.8	5.308
10	16 10 27.55	2.1046	15 57 21.9	5.228
11	16 12 33.83	2.1048	16 2 33.2	5.148
12	16 14 40.13	2.1050	16 7 39.7	5.067
13	16 16 46.43	2.1052	16 12 41.3	4.986
14	16 18 52.75	2.1054	16 17 38.1	4.905
15	16 20 59.08	2.1056	16 22 30.0	4.823
16	16 23 5.42	2.1057	16 27 16.9	4.741
17	16 25 11.77	2.1058	16 31 58.9	4.659
18	16 27 18.12	2.1060	16 36 36.0	4.577
19	16 29 24.48	2.1061	16 41 8.1	4.494
20	16 31 30.85	2.1062	16 45 35.3	4.411
21	16 33 37.23	2.1063	16 49 57.5	4.328
22	16 35 43.61	2.1064	16 54 14.7	4.245
23	16 37 50.00	2.1065	S. 16 58 26.9	4.161

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 39 56.39	2.1065	S. 17 2 34.0	4.077
1	16 42 2.78	2.1065	17 6 36.1	3.993
2	16 44 9.17	2.1066	17 10 33.2	3.909
3	16 46 15.56	2.1066	17 14 25.2	3.824
4	16 48 21.96	2.1066	17 18 12.1	3.740
5	16 50 28.36	2.1066	17 21 53.9	3.655
6	16 52 34.75	2.1065	17 25 30.7	3.570
7	16 54 41.14	2.1064	17 29 2.4	3.485
8	16 56 47.52	2.1064	17 32 28.9	3.400
9	16 58 53.90	2.1063	17 35 50.3	3.314
10	17 1 0.27	2.1062	17 39 6.6	3.229
11	17 3 6.64	2.1061	17 42 17.8	3.143
12	17 5 13.00	2.1060	17 45 23.8	3.057
13	17 7 19.36	2.1058	17 48 24.7	2.971
14	17 9 25.70	2.1056	17 51 20.4	2.885
15	17 11 32.03	2.1054	17 54 10.9	2.798
16	17 13 38.35	2.1052	17 56 56.2	2.712
17	17 15 44.66	2.1050	17 59 36.3	2.625
18	17 17 50.95	2.1048	18 2 11.2	2.539
19	17 19 57.23	2.1045	18 4 40.9	2.452
20	17 22 3.49	2.1042	18 7 5.4	2.365
21	17 24 9.73	2.1039	18 9 24.7	2.278
22	17 26 15.96	2.1036	18 11 38.8	2.192
23	17 28 22.17	2.1033	18 13 47.7	2.105
24	17 30 28.36	2.1030	S. 18 15 51.4	2.018

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 30 28.36	2.1030	S. 18 15 51.4	2.018
1	17 32 34.53	2.1027	18 17 49.9	1.931
2	17 34 40.68	2.1023	18 19 43.1	1.845
3	17 36 46.80	2.1018	18 21 31.2	1.758
4	17 38 52.90	2.1014	18 23 14.0	1.671
5	17 40 58.97	2.1010	18 24 51.6	1.583
6	17 43 5.02	2.1006	18 26 24.0	1.496
7	17 45 11.04	2.1002	18 27 51.1	1.408
8	17 47 17.04	2.0997	18 29 13.0	1.322
9	17 49 23.00	2.0992	18 30 29.7	1.235
10	17 51 28.94	2.0987	18 31 41.2	1.149
11	17 53 34.84	2.0981	18 32 47.4	1.062
12	17 55 40.71	2.0976	18 33 48.4	0.975
13	17 57 46.55	2.0970	18 34 44.2	0.887
14	17 59 52.35	2.0964	18 35 34.8	0.800
15	18 1 58.12	2.0958	18 36 20.1	0.712
16	18 4 3.85	2.0952	18 37 0.2	0.625
17	18 6 9.54	2.0946	18 37 35.1	0.538
18	18 8 15.20	2.0940	18 38 4.8	0.451
19	18 10 20.82	2.0933	18 38 29.3	0.364
20	18 12 26.40	2.0926	18 38 48.5	0.277
21	18 14 31.94	2.0919	18 39 2.6	0.191
22	18 16 37.43	2.0912	18 39 11.4	0.104
23	18 18 42.88	2.0905	S. 18 39 15.0	0.017

FRIDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 20 48.29	2.0898	S. 18 39 13.5	0.069

PHASES OF THE MOON.

		d	h	m
☽	First Quarter, . .	5	6	17.1
○	Full Moon, . . .	13	1	24.3
☾	Last Quarter, . .	19	21	16.9
●	New Moon, . .	27	1	2.9

		d	h
☾	Apogee, ...	5	5.5
☾	Perigee, ...	17	15.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	42° 46′ 20″	3186	44° 12′ 46″	3200	45° 38′ 55″	3214	47° 4′ 48″	3227
	Mars	W.	17 20 5	3178	18 46 40	3178	20 13 15	3180	21 39 48	3184
	a Aquilæ	E.	69 49 40	3350	68 26 26	3373	67 3 39	3399	65 41 21	3424
	Jupiter	E.	98 13 11	2806	96 38 51	2819	95 4 48	2831	93 31 2	2846
	Fomalhaut	E.	102 32 58	3174	101 6 18	3184	99 39 50	3193	98 13 33	3203
2	Sun	W.	54 10 22	3290	55 34 45	3302	56 58 54	3313	58 22 50	3324
	Mars	W.	28 51 6	3215	30 16 57	3223	31 42 38	3231	33 8 10	3240
	a Aquilæ	E.	58 57 31	3571	57 38 25	3603	56 19 54	3638	55 2 1	3676
	Jupiter	E.	85 46 3	2903	84 13 48	2918	82 41 46	2924	81 9 58	2936
	Fomalhaut	E.	91 5 5	3255	89 40 1	3266	88 15 10	3277	86 50 32	3288
3	Sun	W.	65 19 31	3373	66 42 18	3381	68 4 56	3390	69 27 24	3397
	Mars	W.	40 13 28	3278	41 38 5	3286	43 2 33	3292	44 26 54	3299
	Saturn	W.	23 45 46	3067	25 14 36	3072	26 43 20	3075	28 12 0	3082
	a Aquilæ	E.	48 43 4	3892	47 29 36	3944	46 17 1	4001	45 5 22	4061
	Jupiter	E.	73 34 2	2981	72 3 25	2989	70 32 58	2996	69 2 40	3003
	Fomalhaut	E.	79 50 33	3345	78 27 13	3356	77 4 6	3368	75 41 13	3379
4	Sun	W.	76 17 46	3429	77 39 30	3433	78 1 9	3438	80 22 43	3441
	Mars	W.	51 26 52	3325	52 50 34	3330	54 14 12	3333	55 37 45	3336
	Saturn	W.	35 33 48	3102	37 1 55	3105	38 29 58	3108	39 57 58	3111
	Jupiter	E.	61 33 15	3033	60 3 43	3038	58 34 17	3042	57 4 56	3046
	Fomalhaut	E.	68 50 9	3440	67 28 38	3453	66 7 21	3466	64 46 19	3480
	a Pegasi	E.	83 14 48	3325	81 51 6	3332	80 27 32	3338	79 4 5	3345
5	Sun	W.	87 9 42	3452	88 31 0	3453	89 52 17	3453	91 13 34	3452
	Mars	W.	62 34 47	3345	63 58 7	3345	65 21 27	3345	66 44 46	3344
	Saturn	W.	47 17 17	3119	48 45 4	3118	50 12 52	3117	51 40 41	3117
	Antares	W.	32 20 39	3291	33 45 1	3276	35 9 41	3261	36 34 38	3248
	Jupiter	E.	49 39 8	3057	48 10 6	3058	46 41 5	3058	45 12 4	3060
	Fomalhaut	E.	58 5 4	3556	56 45 40	3571	55 26 34	3589	54 7 48	3609
	a Pegasi	E.	72 8 34	3374	70 45 48	3381	69 23 10	3387	68 0 39	3393
6	Sun	W.	98 0 20	3441	99 21 50	3438	100 43 24	3434	102 5 2	3429
	Mars	W.	73 41 50	3332	75 5 24	3329	76 29 2	3325	77 52 45	3319
	Saturn	W.	59 0 10	3105	60 28 14	3101	61 56 22	3097	63 24 35	3093
	Antares	W.	43 43 0	3191	45 9 20	3182	46 35 51	3172	48 2 34	3162
	Jupiter	E.	37 46 54	3052	36 17 46	3050	34 48 36	3047	33 19 22	3045
	Fomalhaut	E.	47 39 41	3728	46 23 24	3759	45 7 39	3792	43 52 29	3828
	a Pegasi	E.	61 9 47	3426	59 48 0	3433	58 26 21	3442	57 4 52	3451
	a Arietis	E.	104 0 37	3200	102 34 28	3195	101 8 13	3189	99 41 51	3184
7	Sun	W.	108 54 46	3396	110 17 5	3391	111 39 32	3382	113 2 9	3374
	Mars	W.	84 52 53	3289	86 17 17	3282	87 41 51	3274	89 6 33	3265
	Saturn	W.	70 47 15	3062	72 16 11	3056	73 45 15	3048	75 14 28	3040
	Antares	W.	55 19 8	3112	56 47 3	3101	58 15 11	3091	59 43 31	3081
	a Pegasi	E.	50 20 13	3509	48 59 59	3525	47 40 2	3542	46 20 24	3562
	a Arietis	E.	92 28 15	3152	91 1 8	3144	89 33 52	3137	88 6 27	3129
8	Sun	W.	119 57 47	3326	121 21 30	3314	122 45 25	3303	124 9 33	3292
	Mars	W.	96 12 42	3217	97 38 31	3207	99 4 32	3196	100 30 46	3184
	Saturn	W.	82 43 16	2993	84 13 37	2983	85 44 11	2972	87 14 59	2962
	Antares	W.	67 8 32	3025	68 38 14	3013	70 8 11	3001	71 38 23	2989
	a Pegasi	E.	39 48 38	3707	38 31 58	3748	37 16 2	3797	36 0 57	3858

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	48° 30′ 25″	3240	49° 55′ 47″	3253	51° 20′ 53″	3265	52° 45′ 45″	3278
	Mars	W.	23 6 16	3188	24 32 39	3193	25 58 56	3200	27 25 5	3207
	α Aquilæ	E.	64 19 32	3453	62 58 14	3480	61 37 27	3508	60 17 12	3539
	Jupiter	E.	91 57 31	2866	90 24 17	2869	88 51 17	2880	87 18 33	2691
	Fomalhaut	E.	96 47 27	3213	95 21 33	3223	93 55 51	3234	92 30 22	3244
2	Sun	W.	59 46 34	3336	61 10 5	3345	62 33 25	3355	63 56 33	3364
	Mars	W.	34 33 32	3247	35 58 45	3256	37 23 49	3264	38 48 43	3271
	α Aquilæ	E.	53 44 48	3713	52 28 15	3755	51 12 26	3798	49 57 22	3844
	Jupiter	E.	79 38 23	2944	78 7 0	2954	76 35 49	2963	75 4 50	2972
	Fomalhaut	E.	85 26 6	3299	84 1 53	3310	82 37 53	3321	81 14 6	3333
3	Sun	W.	70 49 44	3405	72 11 55	3411	73 33 59	3417	74 55 56	3423
	Mars	W.	45 51 7	3305	47 15 13	3311	48 39 12	3316	50 3 5	3321
	Saturn	W.	29 40 32	3086	31 8 59	3090	32 37 21	3096	34 5 36	3098
	α Aquilæ	E.	43 54 42	4126	42 45 5	4197	41 36 36	4274	40 29 19	4356
	Jupiter	E.	67 32 31	3010	66 2 31	3017	64 32 39	3022	63 2 54	3028
	Fomalhaut	E.	74 18 33	3392	72 56 7	3403	71 33 54	3415	70 11 55	3427
4	Sun	W.	81 44 13	3445	83 5 39	3447	84 27 2	3450	85 48 22	3450
	Mars	W.	57 1 14	3339	58 24 41	3341	59 48 5	3343	61 11 27	3344
	Saturn	W.	41 25 54	3114	42 53 47	3114	44 21 39	3117	45 49 28	3117
	Jupiter	E.	55 35 40	3048	54 6 27	3052	52 37 18	3054	51 8 12	3056
	Fomalhaut	E.	63 25 32	3494	62 5 1	3507	60 44 45	3523	59 24 46	3538
	α Pegasi	E.	77 40 45	3351	76 17 32	3357	74 54 26	3363	73 31 27	3368
5	Sun	W.	92 34 52	3451	93 56 11	3450	95 17 31	3447	96 38 54	3445
	Mars	W.	68 8 7	3343	69 31 29	3341	70 54 53	3338	72 18 20	3336
	Saturn	W.	53 8 30	3115	54 36 21	3113	56 4 15	3111	57 32 11	3109
	Antares	W.	37 59 50	3235	39 25 18	3224	40 50 59	3213	42 16 53	3202
	Jupiter	E.	43 43 4	3058	42 14 3	3058	40 45 2	3056	39 15 59	3055
	Fomalhaut	E.	52 49 23	3629	51 31 20	3651	50 13 41	3676	48 56 28	3700
	α Pegasi	E.	66 38 14	3399	65 15 56	3406	63 53 46	3412	62 31 43	3418
6	Sun	W.	103 26 46	3423	104 48 36	3418	106 10 32	3412	107 32 35	3405
	Mars	W.	79 16 33	3314	80 40 28	3309	82 4 29	3303	83 28 37	3296
	Saturn	W.	64 52 53	3087	66 21 18	3082	67 49 50	3076	69 18 29	3070
	Antares	W.	49 29 29	3152	50 56 36	3142	52 23 55	3133	53 51 25	3122
	Jupiter	E.	31 50 5	3042	30 20 44	3038	28 51 18	3034	27 21 48	3030
	Fomalhaut	E.	42 37 56	3869	41 24 5	3916	40 11 1	3965	38 58 47	4021
	α Pegasi	E.	55 43 33	3460	54 22 24	3471	53 1 27	3482	51 40 43	3495
	α Arietis	E.	98 15 23	3178	96 48 48	3171	95 22 4	3165	93 55 13	3159
7	Sun	W.	114 24 55	3365	115 47 52	3356	117 10 59	3346	118 34 17	3336
	Mars	W.	90 31 25	3256	91 56 28	3247	93 21 41	3237	94 47 5	3228
	Saturn	W.	76 43 51	3031	78 13 25	3022	79 43 10	3013	81 13 7	3003
	Antares	W.	61 12 4	3070	62 40 50	3059	64 9 50	3047	65 39 4	3036
	α Pegasi	E.	45 1 8	3584	43 42 16	3610	42 23 52	3637	41 5 58	3669
	α Arietis	E.	86 38 53	3121	85 11 9	3113	83 43 15	3104	82 15 10	3096
8	Sun	W.	125 33 54	3280	126 58 29	3268	128 23 18	3255	129 48 22	3243
	Mars	W.	101 57 14	3173	103 23 56	3161	104 50 51	3149	106 18 2	3137
	Saturn	W.	88 46 0	2950	90 17 15	2939	91 48 45	2927	93 20 30	2914
	Antares	W.	73 8 50	2976	74 39 33	2964	76 10 31	2951	77 41 45	2939
	α Pegasi	E.	34 46 49	3918	33 33 47	3991	32 21 59	4078	31 11 36	4178

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	α Arietis	E.	80° 46′ 55″	3087	79° 18′ 29″	3078	77° 49′ 53″	3069	76° 21′ 6″	3060
9	SUN	W.	131 13 40	3230	132 39 14	3217	134 5 3	3204	135 31 8	3191
	Mars	W.	107 45 27	3124	109 13 8	3111	110 41 4	3098	112 9 16	3084
	Saturn	W.	94 52 31	2903	96 24 47	2891	97 57 18	2876	99 30 7	2864
	Antares	W.	79 13 15	2925	80 45 2	2912	82 17 5	2899	83 49 25	2886
	α Arietis	E.	68 54 20	3014	67 24 25	3005	65 54 18	2996	64 24 0	2987
	Aldebaran	E.	101 4 5	2861	99 30 56	2848	97 57 30	2835	96 23 47	2822
10	Saturn	W.	107 18 24	2797	108 52 56	2784	110 27 45	2769	112 2 54	2756
	Antares	W.	91 35 24	2818	93 9 29	2805	94 43 51	2791	96 18 31	2777
	α Aquilæ	W.	47 29 12	3649	48 46 54	3591	50 5 38	3538	51 25 20	3489
	α Arietis	E.	56 49 56	2949	55 18 39	2942	53 47 14	2937	52 15 42	2932
	Aldebaran	E.	88 30 59	2755	86 55 32	2741	85 19 47	2728	83 43 44	2713
11	Antares	W.	104 16 16	2711	105 52 41	2698	107 29 23	2686	109 6 22	2673
	α Aquilæ	W.	58 16 37	3282	59 41 10	3247	61 6 23	3214	62 32 15	3183
	Jupiter	W.	24 21 9	2655	25 58 49	2639	27 36 51	2624	29 15 14	2608
	α Arietis	E.	44 37 4	2927	43 5 20	2931	41 33 41	2938	40 2 10	2946
	Aldebaran	E.	75 38 47	2643	74 0 51	2630	72 22 37	2616	70 44 4	2601
12	α Aquilæ	W.	69 50 27	3046	71 19 40	3026	72 49 21	3003	74 19 30	2983
	Fomalhaut	W.	37 49 35	3524	39 9 33	3441	40 31 3	3367	41 53 57	3300
	Jupiter	W.	37 32 16	2535	39 12 40	2522	40 53 22	2508	42 34 24	2496
	α Pegasi	W.	25 15 25	4660	26 16 58	4378	27 22 39	4156	28 31 47	3974
	Aldebaran	E.	62 26 36	2535	60 46 12	2522	59 5 29	2510	57 24 29	2497
	Pollux	E.	106 3 5	2618	104 24 35	2604	102 45 46	2591	101 6 38	2577
13	α Aquilæ	W.	81 56 13	2906	83 28 37	2882	85 1 19	2860	86 34 18	2837
	Jupiter	W.	51 4 2	2434	52 46 48	2423	54 29 50	2412	56 13 8	2401
	Fomalhaut	W.	49 5 59	3041	50 35 21	3000	52 5 34	2963	53 36 33	2929
	α Pegasi	W.	34 56 18	3356	36 19 22	3276	37 44 3	3200	39 10 12	3134
	Aldebaran	E.	48 55 12	2438	47 12 31	2426	45 29 34	2416	43 46 22	2406
	Pollux	E.	92 46 27	2515	91 5 35	2504	89 24 27	2493	87 43 4	2483
14	α Aquilæ	W.	94 22 34	2813	95 56 45	2808	97 31 2	2804	99 5 25	2801
	Jupiter	W.	64 53 12	2354	66 37 53	2346	68 22 46	2337	70 7 51	2330
	Fomalhaut	W.	61 21 20	2792	62 55 58	2770	64 31 5	2750	66 6 38	2732
	α Pegasi	W.	46 38 38	2886	48 11 12	2852	49 44 33	2818	51 18 37	2788
	Aldebaran	E.	35 6 50	2360	33 22 16	2350	31 37 29	2342	29 52 31	2335
	Pollux	E.	79 12 48	2438	77 30 8	2431	75 47 18	2424	74 4 18	2419
15	Jupiter	W.	78 55 52	2297	80 41 55	2292	82 28 7	2287	84 14 25	2282
	Fomalhaut	W.	74 10 1	2658	75 47 37	2647	77 25 28	2638	79 3 32	2630
	α Pegasi	W.	59 17 55	2670	60 55 15	2652	62 32 59	2636	64 11 5	2621
	α Arietis	W.	18 12 54	4115	19 22 41	3812	20 37 31	3573	21 56 35	3385
	Pollux	E.	65 27 24	2396	63 43 43	2394	61 59 59	2391	60 16 12	2391
	Regulus	E.	101 11 37	2304	99 25 43	2298	97 39 41	2293	95 53 31	2289
16	Jupiter	W.	93 7 32	2264	94 54 23	2262	96 41 19	2260	98 28 18	2260
	Fomalhaut	W.	87 16 29	2600	88 55 26	2596	90 34 27	2592	92 13 31	2589
	α Pegasi	W.	72 26 5	2565	74 5 48	2558	75 45 41	2551	77 25 44	2546
	α Arietis	W.	29 14 44	2848	30 48 10	2788	32 22 54	2737	33 58 45	2693
	Pollux	E.	51 37 17	2397	49 53 38	2402	48 10 6	2407	46 26 41	2414
	Regulus	E.	87 1 8	2270	85 14 24	2268	83 27 37	2266	81 40 46	2265

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
8	α Arietis	E.	74° 52′ 7″	3061	73° 22′ 57″	3048	71° 53′ 36″	3033	70° 24′ 4″	3023
9	Sun	W.	136 57 28	3170	138 24 4	3163	139 50 57	3150	141 18 6	3135
	Mars	W.	113 37 45	3071	115 6 29	3057	116 35 31	3043	118 4 50	3029
	Saturn	W.	101 3 12	2851	102 36 34	2838	104 10 13	2824	105 44 10	2811
	Antares	W.	85 22 2	2873	86 54 56	2859	88 28 8	2846	90 1 37	2831
	α Arietis	E.	62 53 31	2979	61 22 52	2971	59 52 3	2963	58 21 4	2956
	Aldebaran	E.	94 49 48	2809	93 15 32	2796	91 40 58	2782	90 6 7	2769
10	Saturn	W.	113 38 20	2742	115 14 4	2727	116 50 8	2715	118 26 28	2699
	Antares	W.	97 53 29	2763	99 28 45	2750	101 4 18	2738	102 40 8	2724
	α Aquilæ	W.	52 45 56	3443	54 7 24	3399	55 29 42	3356	56 52 47	3319
	α Arietis	E.	50 44 5	2929	49 12 23	2927	47 40 38	2926	46 8 51	2925
	Aldebaran	E.	82 7 22	2699	80 30 41	2686	78 53 42	2672	77 16 24	2657
11	Antares	W.	110 43 38	2660	112 21 11	2649	113 58 59	2638	115 37 3	2627
	α Aquilæ	W.	63 58 45	3153	65 25 51	3124	66 53 31	3097	68 21 44	3073
	Jupiter	W.	30 53 58	2593	32 33 2	2578	34 12 27	2564	35 52 11	2550
	α Arietis	E.	38 30 49	2958	36 59 44	2974	35 28 59	2996	33 58 40	3020
	Aldebaran	E.	69 5 11	2588	67 26 0	2574	65 46 30	2561	64 6 42	2546
12	α Aquilæ	W.	75 50 4	2963	77 21 3	2946	78 52 25	2927	80 24 9	2912
	Fomalhaut	W.	43 18 8	3239	44 43 31	3183	46 10 0	3132	47 37 31	3085
	Jupiter	W.	44 15 44	2482	45 57 23	2470	47 39 18	2458	49 21 32	2445
	α Pegasi	W.	29 43 52	3818	30 58 36	3680	32 15 44	3560	33 35 2	3454
	Aldebaran	E.	55 43 12	2485	54 1 38	2472	52 19 46	2460	50 37 37	2449
	Pollux	E.	99 27 11	2564	97 47 26	2551	96 7 23	2538	94 27 3	2527
13	α Aquilæ	W.	88 7 32	2846	89 41 0	2837	91 14 40	2828	92 48 32	2820
	Jupiter	W.	57 56 40	2391	59 40 28	2382	61 24 29	2372	63 8 44	2363
	Fomalhaut	W.	55 8 15	2896	56 40 37	2868	58 13 37	2841	59 47 12	2815
	α Pegasi	W.	40 37 40	3074	42 6 21	3021	43 36 8	2973	45 6 55	2928
	Aldebaran	E.	42 2 56	2396	40 19 15	2386	38 35 20	2376	36 51 11	2366
	Pollux	E.	86 1 27	2473	84 19 36	2464	82 37 32	2456	80 55 16	2447
14	α Aquilæ	W.	100 39 52	2798	102 14 22	2798	103 48 52	2799	105 23 21	2801
	Jupiter	W.	71 53 7	2322	73 38 34	2315	75 24 11	2309	77 9 57	2303
	Fomalhaut	W.	67 42 36	2714	69 18 57	2698	70 55 39	2684	72 32 41	2670
	α Pegasi	W.	52 53 21	2760	54 28 42	2735	56 4 36	2711	57 41 1	2689
	Aldebaran	E.	28 7 22	2327	26 22 2	2320	24 36 32	2314	22 50 53	2308
	Pollux	E.	72 21 10	2413	70 37 54	2408	68 54 30	2403	67 11 0	2399
15	Jupiter	W.	86 0 51	2278	87 47 23	2274	89 34 1	2270	91 20 44	2267
	Fomalhaut	W.	80 41 49	2620	82 20 17	2614	83 58 53	2608	85 37 37	2602
	α Pegasi	W.	65 49 31	2608	67 28 15	2596	69 7 17	2584	70 46 34	2574
	α Arietis	W.	23 19 9	3233	24 44 41	3107	26 12 42	3004	27 42 50	2920
	Pollux	E.	58 32 24	2390	56 48 35	2391	55 4 47	2392	53 21 1	2394
	Regulus	E.	94 7 15	2284	92 20 52	2279	90 34 22	2276	88 47 47	2273
16	Jupiter	W.	100 15 19	2256	102 2 23	2256	103 49 28	2254	105 36 35	2253
	Fomalhaut	W.	93 52 36	2592	95 31 42	2593	97 10 47	2594	98 49 50	2596
	α Pegasi	W.	79 5 55	2540	80 46 13	2535	82 26 37	2533	84 7 5	2530
	α Arietis	W.	35 35 34	2656	37 13 14	2622	38 51 38	2594	40 30 41	2570
	Pollux	E.	44 43 26	2422	43 0 23	2433	41 17 34	2444	39 35 2	2458
	Regulus	E.	79 53 52	2261	78 6 55	2260	76 19 56	2259	74 32 56	2258

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	Sun	E.	141° 21′ 30″	2608	139° 42′ 32″	2598	138° 3′ 27″	2590	136° 24′ 18″	2587
17	α Pegasi	W.	85 47 37	2526	87 28 11	2527	89 8 47	2527	90 49 23	2527
	α Arietis	W.	42 10 17	2548	43 50 23	2530	45 30 55	2514	47 11 49	2499
	Pollux	E.	37 52 49	2474	36 10 59	2494	34 29 37	2516	32 48 46	2543
	Regulus	E.	72 45 55	2258	70 58 53	2258	69 11 52	2256	67 24 51	2256
	Sun	E.	128 7 45	2579	126 28 21	2578	124 48 56	2578	123 9 31	2578
18	α Pegasi	W.	99 11 49	2541	100 52 5	2547	102 32 13	2553	104 12 13	2560
	α Arietis	W.	55 40 30	2453	57 22 51	2447	59 5 19	2442	60 47 54	2438
	Aldebaran	W.	21 38 17	2262	23 25 13	2263	25 12 7	2265	26 58 58	2266
	Regulus	E.	58 30 0	2264	56 43 7	2266	54 56 17	2268	53 9 30	2270
	Sun	E.	114 52 36	2583	113 13 17	2585	111 34 1	2587	109 54 48	2589
19	α Arietis	W.	69 21 53	2429	71 4 46	2429	72 47 40	2429	74 30 34	2430
	Aldebaran	W.	35 52 25	2280	37 38 54	2283	39 25 19	2286	41 11 39	2289
	Regulus	E.	44 16 32	2285	42 30 10	2287	40 43 52	2291	38 57 40	2295
	Sun	E.	101 39 31	2603	100 0 40	2606	98 21 53	2610	96 43 11	2613
20	α Arietis	W.	83 4 30	2441	84 47 7	2444	86 29 39	2448	88 12 6	2451
	Aldebaran	W.	50 2 3	2308	51 47 51	2311	53 33 34	2315	55 19 11	2320
	Regulus	E.	30 8 6	2317	28 22 31	2322	26 37 4	2327	24 51 44	2333
	Sun	E.	88 30 59	2634	86 52 50	2638	85 14 46	2643	83 36 49	2647
21	α Arietis	W.	96 42 49	2476	98 24 36	2483	100 6 14	2489	101 47 43	2496
	Aldebaran	W.	64 5 39	2342	65 50 37	2347	67 35 28	2352	69 20 12	2357
	Pollux	W.	22 45 20	2872	24 18 15	2813	25 52 26	2765	27 27 40	2726
	Sun	E.	75 28 40	2672	73 51 23	2678	72 14 13	2683	70 37 10	2689
22	Aldebaran	W.	78 2 3	2383	79 46 2	2388	81 29 54	2394	83 13 38	2399
	Pollux	W.	35 34 37	2607	37 13 22	2596	38 52 22	2587	40 31 35	2579
	Sun	E.	62 33 53	2719	60 57 38	2725	59 21 31	2732	57 45 33	2738
23	Aldebaran	W.	91 50 13	2429	93 33 6	2436	95 15 50	2442	96 58 25	2449
	Pollux	W.	48 49 35	2563	50 29 21	2563	52 9 7	2564	53 48 52	2564
	Sun	E.	49 48 0	2774	48 12 58	2782	46 38 7	2790	45 3 26	2798
24	Pollux	W.	62 6 54	2580	63 46 16	2585	65 25 32	2590	67 4 41	2596
	Regulus	W.	25 25 37	2494	27 6 58	2501	28 48 10	2507	30 29 13	2515
	Sun	E.	37 12 51	2845	35 39 21	2855	34 6 4	2866	32 33 1	2876
29	Sun	W.	23 21 25	3294	24 45 43	3301	26 9 53	3307	27 33 56	3313
	α Aquilæ	E.	62 46 35	3470	61 25 37	3497	60 5 10	3527	58 45 16	3560
	Jupiter	E.	89 21 3	2877	87 48 15	2888	86 15 40	2898	84 43 19	2909
	Fomalhaut	E.	95 3 30	3198	93 37 18	3207	92 11 17	3216	90 45 27	3226
30	Sun	W.	34 32 16	3351	35 55 29	3358	37 18 34	3365	38 41 30	3373
	α Aquilæ	E.	52 14 58	3745	50 58 58	3790	49 43 45	3837	48 29 21	3887
	Jupiter	E.	77 4 45	2958	75 33 39	2966	74 2 45	2976	72 32 1	2985
	Fomalhaut	E.	83 39 16	3279	82 14 40	3290	80 50 17	3301	79 26 7	3313
	α Pegasi	E.	98 27 10	3224	97 1 29	3231	95 35 57	3239	94 10 34	3246
31	Sun	W.	45 33 59	3410	46 56 4	3416	48 18 2	3423	49 39 52	3430
	Jupiter	E.	65 1 4	3025	63 31 21	3032	62 1 48	3039	60 32 23	3045
	α Pegasi	E.	87 5 52	3286	85 41 23	3294	84 17 4	3301	82 52 54	3310

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Sun	E.	134° 45′ 5″	2584	133° 5′ 48″	2583	131° 26′ 29″	2581	129° 47′ 8″	2580
17	a Pegasi	W.	92 29 58	2529	94 10 31	2531	95 51 1	2534	97 31 27	2537
	a Arietis	W.	48 53 3	2487	50 34 34	2477	52 16 20	2467	53 58 19	2459
	Pollux	E.	31 8 32	2574	29 29 2	2613	27 50 25	2659	26 12 50	2712
	Regulus	E.	65 37 50	2259	63 50 50	2260	62 3 52	2261	60 16 55	2262
	Sun	E.	121 30 6	2579	119 50 42	2579	118 11 18	2580	116 31 56	2582
18	a Pegasi	W.	105 52 4	2567	107 31 44	2575	109 11 13	2584	110 50 30	2596
	a Arietis	W.	62 30 35	2435	64 13 20	2432	65 56 9	2430	67 39 1	2430
	Aldebaran	W.	28 45 47	2269	30 32 32	2271	32 19 14	2274	34 5 52	2277
	Regulus	E.	51 22 47	2273	49 36 7	2276	47 49 31	2278	46 2 59	2281
	Sun	E.	108 15 37	2591	106 36 30	2593	104 57 26	2597	103 18 27	2599
19	a Arietis	W.	76 13 26	2431	77 56 16	2433	79 39 4	2435	81 21 49	2438
	Aldebaran	W.	42 57 54	2293	44 44 4	2296	46 30 9	2300	48 16 9	2304
	Regulus	E.	37 11 33	2299	35 25 32	2303	33 39 37	2307	31 53 48	2312
	Sun	E.	95 4 34	2617	93 26 2	2621	91 47 35	2625	90 9 14	2629
20	a Arietis	W.	89 54 28	2456	91 36 43	2460	93 18 52	2465	95 0 54	2470
	Aldebaran	W.	57 4 41	2324	58 50 5	2328	60 35 23	2333	62 20 34	2337
	Regulus	E.	23 6 33	2340	21 21 32	2346	19 36 40	2354	17 51 59	2365
	Sun	E.	81 58 58	2652	80 21 13	2657	78 43 35	2662	77 6 4	2667
21	a Arietis	W.	103 29 3	2503	105 10 14	2510	106 51 14	2517	108 32 3	2525
	Aldebaran	W.	71 4 49	2362	72 49 19	2367	74 33 41	2372	76 17 56	2378
	Pollux	W.	29 3 47	2690	30 40 40	2663	32 18 10	2640	33 56 11	2621
	Sun	E.	69 0 15	2695	67 23 28	2700	65 46 48	2706	64 10 16	2713
22	Aldebaran	W.	84 57 14	2406	86 40 42	2411	88 24 1	2417	90 7 11	2423
	Pollux	W.	42 10 59	2573	43 50 31	2569	45 30 9	2566	47 9 51	2564
	Sun	E.	56 9 44	2745	54 34 4	2752	52 58 33	2760	51 23 12	2766
23	Aldebaran	W.	98 40 50	2455	100 23 6	2462	102 5 12	2470	103 47 8	2476
	Pollux	W.	55 28 36	2566	57 8 17	2569	58 47 54	2573	60 27 26	2576
	Sun	E.	43 28 56	2807	41 54 37	2816	40 20 30	2825	38 46 34	2835
24	Pollux	W.	68 43 43	2601	70 22 37	2607	72 1 22	2614	73 39 58	2620
	Regulus	W.	32 10 6	2521	33 50 50	2529	35 31 23	2536	37 11 46	2543
	Sun	E.	31 0 12	2881	29 27 39	2901	27 55 22	2915	26 23 22	2930
29	Sun	W.	28 57 52	3320	30 21 40	3326	31 45 21	3334	33 8 53	3342
	a Aquilæ	E.	57 25 57	3591	56 7 13	3627	54 49 8	3663	53 31 42	3703
	Jupiter	E.	83 11 12	2919	81 39 16	2928	80 7 34	2939	78 36 3	2948
	Fomalhaut	E.	89 19 48	3236	87 54 21	3247	86 29 7	3257	85 4 5	3268
30	Sun	W.	40 4 17	3381	41 26 55	3388	42 49 25	3396	44 11 46	3403
	a Aquilæ	E.	47 15 48	3942	46 3 11	4001	44 51 32	4064	43 40 55	4133
	Jupiter	E.	71 1 29	2993	69 31 8	3001	68 0 57	3009	66 30 55	3017
	Fomalhaut	E.	78 2 11	3325	76 38 29	3338	75 15 1	3351	73 51 48	3364
	a Pegasi	E.	92 45 19	3253	91 20 13	3262	89 55 17	3270	88 30 30	3277
31	Sun	W.	51 1 35	3435	52 23 12	3441	53 44 42	3446	55 6 6	3451
	Jupiter	E.	59 3 6	3052	57 33 57	3057	56 4 55	3063	54 36 0	3068
	a Pegasi	E.	81 28 54	3318	80 5 3	3325	78 41 21	3334	77 17 49	3343

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	14 24 53.09	9.794	S.14 22 44.4	48.24	16 9.79	66.92	16 17.25	0.062
Sat.	2	14 28 48.54	9.827	14 41 55.4	47.65	16 10.04	67.04	16 18.36	0.029
Sun.	3	14 32 44.77	9.860	15 0 52.1	47.04	16 10.29	67.15	16 18.68	0.004
Mon.	4	14 36 41.80	9.893	15 19 34.0	46.42	16 10.54	67.27	16 18.20	0.037
Tues.	5	14 40 39.64	9.926	15 38 0.6	45.77	16 10.79	67.39	16 16.92	0.070
Wed.	6	14 44 38.28	9.960	15 56 11.5	45.11	16 11.03	67.51	16 14.84	0.104
Thur.	7	14 48 37.74	9.994	16 14 6.5	44.44	16 11.27	67.63	16 11.94	0.138
Fri.	8	14 52 38.02	10.029	16 31 45.2	43.75	16 11.51	67.75	16 8.22	0.173
Sat.	9	14 56 39.14	10.064	16 49 7.0	43.04	16 11.74	67.87	16 3.67	0.207
Sun.	10	15 0 41.10	10.099	17 6 11.7	42.32	16 11.97	67.99	15 58.28	0.242
Mon.	11	15 4 43.90	10.134	17 22 58.9	41.58	16 12.20	68.11	15 52.05	0.277
Tues.	12	15 8 47.55	10.170	17 39 28.1	40.82	16 12.42	68.23	15 44.97	0.313
Wed.	13	15 12 52.07	10.205	17 55 38.7	40.05	16 12.64	68.35	15 37.04	0.348
Thur.	14	15 16 57.44	10.241	18 11 30.7	39.26	16 12.85	68.46	15 28.24	0.384
Fri.	15	15 21 3.68	10.276	18 27 3.7	38.45	16 13.06	68.58	15 18.58	0.419
Sat.	16	15 25 10.77	10.312	18 42 17.2	37.63	16 13.26	68.70	15 8.08	0.455
Sun.	17	15 29 18.72	10.348	18 57 10.8	36.79	16 13.46	68.82	14 56.72	0.490
Mon.	18	15 33 27.52	10.383	19 11 44.1	35.94	16 13.66	68.93	14 44.50	0.526
Tues.	19	15 37 37.17	10.418	19 25 56.6	35.07	16 13.85	69.05	14 31.44	0.562
Wed.	20	15 41 47.67	10.453	19 39 48.2	34.19	16 14.04	69.16	14 17.54	0.597
Thur.	21	15 45 59.00	10.488	19 53 18.6	33.29	16 14.23	69.27	14 2.81	0.632
Fri.	22	15 50 11.16	10.522	20 6 27.4	32.38	16 14.41	69.38	13 47.25	0.666
Sat.	23	15 54 24.13	10.555	20 19 14.0	31.45	16 14.59	69.49	13 30.88	0.699
Sun.	24	15 58 37.90	10.588	20 31 38.1	30.51	16 14.77	69.59	13 13.70	0.732
Mon.	25	16 2 52.46	10.621	20 43 39.4	29.55	16 14.95	69.70	12 55.75	0.764
Tues.	26	16 7 7.78	10.652	20 55 17.5	28.58	16 15.12	69.80	12 37.04	0.795
Wed.	27	16 11 23.84	10.683	21 6 32.3	27.60	16 15.29	69.90	12 17.59	0.825
Thur.	28	16 15 40.62	10.712	21 17 23.0	26.60	16 15.46	70.00	11 57.42	0.855
Fri.	29	16 19 58.11	10.741	21 27 49.5	25.59	16 15.63	70.10	11 36.55	0.883
Sat.	30	16 24 16.27	10.768	21 37 51.6	24.56	16 15.79	70.19	11 15.00	0.911
Sun.	31	16 28 35.08	10.794	S.21 47 28.9	23.52	16 15.95	70.28	10 52.81	0.937

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

NOVEMBER, 1867.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	14 24 55.75	9.794	S.14 22 57.5	48.24	16 17.27	0.062	14 41 13.02
Sat.	2	14 28 51.21	9.827	14 42 8.4	47.65	16 18.36	0.029	14 45 9.57
Sun.	3	14 32 47.45	9.860	15 1 4.9	47.04	16 18.68	0.004	14 49 6.13
Mon.	4	14 36 44.49	9.893	15 19 46.6	46.42	16 18.19	0.037	14 53 2.68
Tues.	5	14 40 42.33	9.926	15 38 13.0	45.77	16 16.91	0.070	14 56 59.24
Wed.	6	14 44 40.98	9.960	15 56 23.7	45.11	16 14.81	0.104	15 0 55.79
Thur.	7	14 48 40.44	9.994	16 14 18.5	44.44	16 11.90	0.138	15 4 52.34
Fri.	8	14 52 40.73	10.029	16 31 56.9	43.75	16 8.17	0.173	15 8 48.90
Sat.	9	14 56 41.84	10.064	16 49 18.5	43.04	16 3.61	0.207	15 12 45.45
Sun.	10	15 0 43.79	10.099	17 6 23.0	42.32	15 58.22	0.242	15 16 42.01
Mon.	11	15 4 46.58	10.134	17 23 9.9	41.58	15 51.98	0.277	15 20 38.56
Tues.	12	15 8 50.22	10.170	17 39 38.7	40.82	15 44.90	0.313	15 24 35.12
Wed.	13	15 12 54.72	10.205	17 55 49.1	40.05	15 36.95	0.348	15 28 31.67
Thur.	14	15 17 0.08	10.241	18 11 40.8	39.26	15 28.15	0.384	15 32 28.23
Fri.	15	15 21 6.30	10.276	18 27 13.5	38.45	15 18.48	0.419	15 36 24.78
Sat.	16	15 25 13.37	10.312	18 42 26.7	37.63	15 7.97	0.455	15 40 21.34
Sun.	17	15 29 21.29	10.348	18 57 20.0	36.79	14 56.60	0.490	15 44 17.89
Mon.	18	15 33 30.07	10.383	19 11 52.9	35.94	14 44.38	0.526	15 48 14.45
Tues.	19	15 37 39.69	10.418	19 26 5.1	35.07	14 31.31	0.562	15 52 11.00
Wed.	20	15 41 50.16	10.453	19 39 56.4	34.19	14 17.40	0.597	15 56 7.56
Thur.	21	15 46 1.46	10.488	19 53 26.5	33.29	14 2.66	0.632	16 0 4.12
Fri.	22	15 50 13.58	10.522	20 6 34.9	32.38	13 47.09	0.666	16 4 0.67
Sat.	23	15 54 26.51	10.555	20 19 21.1	31.45	13 30.72	0.699	16 7 57.23
Sun.	24	15 58 40.24	10.588	20 31 44.8	30.51	13 13.54	0.732	16 11 53.78
Mon.	25	16 2 54.75	10.621	20 43 45.7	29.55	12 55.59	0.764	16 15 50.34
Tues.	26	16 7 10.02	10.652	20 55 23.5	28.58	12 36.87	0.795	16 19 46.89
Wed.	27	16 11 26.03	10.683	21 6 37.9	27.60	12 17.42	0.825	16 23 43.45
Thur.	28	16 15 42.76	10.712	21 17 28.3	26.60	11 57.25	0.855	16 27 40.01
Fri.	29	16 20 0.19	10.741	21 27 54.5	25.59	11 36.37	0.883	16 31 36.56
Sat.	30	16 24 18.29	10.768	21 37 56.2	24.56	11 14.83	0.911	16 35 33.12
Sun.	31	16 28 37.04	10.794	S.21 47 33.2	23.52	10 52.64	0.937	16 39 29.68

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	305	218 37 17.9	36 42.9	150.27	+0.38	9.9965013	47.4	9 17 15.43
2	306	219 37 25.1	36 50.0	150.33	0.31	.9963878	47.1	9 13 19.52
3	307	220 37 33.8	36 58.6	150.40	0.22	.9962751	46.7	9 9 23.62
4	308	221 37 44.0	37 8.7	150.46	+0.10	.9961633	46.3	9 5 27.71
5	309	222 37 55.8	37 20.4	150.53	—0.03	.9960526	45.8	9 1 31.81
6	310	223 38 9.1	37 33.5	150.59	0.16	.9959432	45.2	8 57 35.90
7	311	224 38 23.9	37 48.2	150.65	0.30	.9958352	44.6	8 53 39.99
8	312	225 38 40.2	38 4.4	150.71	0.43	.9957288	43.9	8 49 44.08
9	313	226 38 57.9	38 22.0	150.77	0.54	.9956241	43.2	8 45 48.17
10	314	227 39 17.2	38 41.2	150.84	0.63	.9955213	42.4	8 41 52.26
11	315	228 39 38.2	39 2.0	150.90	0.70	.9954203	41.6	8 37 56.35
12	316	229 40 0.8	39 24.5	150.98	0.74	.9953212	40.8	8 34 0.44
13	317	230 40 25.1	39 48.7	151.05	0.75	.9952240	40.1	8 30 4.53
14	318	231 40 51.2	40 14.7	151.13	0.73	.9951288	39.3	8 26 8.62
15	319	232 41 19.0	40 42.3	151.20	0.69	.9950356	38.5	8 22 12.72
16	320	233 41 48.6	41 11.7	151.27	0.62	.9949443	37.7	8 18 16.81
17	321	234 42 20.0	41 43.0	151.34	0.53	.9948548	37.0	8 14 20.90
18	322	235 42 53.2	42 16.1	151.42	0.41	.9947671	36.2	8 10 24.99
19	323	236 43 28.2	42 51.0	151.49	0.27	.9946810	35.5	8 6 29.08
20	324	237 44 4.9	43 27.5	151.57	—0.13	.9945965	34.9	8 2 33.17
21	325	238 44 43.4	44 5.8	151.64	0.00	.9945135	34.3	7 58 37.26
22	326	239 45 23.6	44 45.9	151.71	+0.11	.9944317	33.8	7 54 41.35
23	327	240 46 5.3	45 27.5	151.78	0.21	.9943512	33.3	7 50 45.44
24	328	241 46 48.6	46 10.6	151.84	0.30	.9942719	32.8	7 46 49.53
25	329	242 47 33.4	46 55.2	151.90	0.35	.9941935	32.3	7 42 53.62
26	330	243 48 19.6	47 41.2	151.95	0.37	.9941170	31.7	7 38 57.71
27	331	244 49 7.1	48 28.6	152.00	0.36	.9940414	31.2	7 35 1.79
28	332	245 49 55.9	49 17.3	152.05	0.32	.9939668	30.7	7 31 5.88
29	333	246 50 45.8	50 7.1	152.10	0.25	.9938935	30.2	7 27 9.97
30	334	247 51 36.7	50 57.8	152.14	0.16	.9938215	29.6	7 23 14.06
31	335	248 52 28.4	51 49.3	152.18	+0.06	9.9937510	29.0	7 19 18.16

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 48.9	14 47.8	54 15.5	−0.42	54 11.5	−0.23	3 46.9	1.98	5.0
2	14 47.4	14 47.6	54 9.9	−0.03	54 10.8	+0.18	4 34.2	1.96	6.0
3	14 48.5	14 50.2	54 14.2	+0.39	54 20.3	0.62	5 21.0	1.93	7.0
4	14 52.6	14 55.6	54 29.0	0.83	54 40.2	1.04	6 7.1	1.91	8.0
5	14 59.4	15 3.8	54 54.0	1.25	55 10.2	1.44	6 52.8	1.90	9.0
6	15 8.8	15 14.4	55 28.7	1.62	55 49.2	1.78	7 38.4	1.91	10.0
7	15 20.4	15 26.9	56 11.4	1.91	56 35.1	2.02	8 24.5	1.94	11.0
8	15 33.6	15 40.5	56 59.8	2.09	57 25.1	2.11	9 11.7	2.00	12.0
9	15 47.4	15 54.2	57 50.6	2.10	58 15.5	2.04	10 0.7	2.09	13.0
10	16 0.7	16 6.8	58 39.4	1.93	59 1.8	1.78	10 52.1	2.20	14.0
11	16 12.4	16 17.2	59 22.1	1.58	59 39.8	1.35	11 46.3	2.32	15.0
12	16 21.2	16 24.3	59 54.5	1.09	60 6.0	0.81	12 43.4	2.43	16.0
13	16 26.5	16 27.7	60 14.0	+0.51	60 18.8	+0.22	13 42.8	2.51	17.0
14	16 27.9	16 27.2	60 19.2	−0.07	60 16.6	−0.35	14 43.4	2.52	18.0
15	16 25.6	16 23.3	60 10.9	0.59	60 2.3	0.81	15 43.4	2.47	19.0
16	16 20.3	16 16.8	59 51.3	1.00	59 38.3	1.15	16 41.6	2.37	20.0
17	16 12.8	16 8.5	59 23.6	1.27	59 7.8	1.35	17 37.1	2.25	21.0
18	16 4.0	15 59.3	58 51.2	1.41	58 34.1	1.44	18 29.8	2.14	22.0
19	15 54.6	15 49.8	58 16.7	1.45	57 59.4	1.44	19 20.1	2.06	23.0
20	15 45.1	15 40.5	57 42.2	1.42	57 25.2	1.39	20 8.5	1.99	24.0
21	15 36.0	15 31.6	57 8.7	1.36	56 52.5	1.33	20 55.7	1.96	25.0
22	15 27.4	15 23.2	56 36.8	1.29	56 21.6	1.25	21 42.6	1.95	26.0
23	15 19.2	15 15.3	56 6.8	1.21	55 52.5	1.17	22 29.4	1.96	27.0
24	15 11.5	15 7.9	55 38.7	1.13	55 25.5	1.08	23 16.7	1.98	28.0
25	15 4.5	15 1.2	55 12.8	1.03	55 0.8	0.97	☌		29.0
26	14 58.2	14 55.3	54 49.6	0.90	54 39.2	0.82	0 4.5	2.00	0.3
27	14 52.8	14 50.5	54 29.8	0.74	54 21.5	0.64	0 52.7	2.01	1.3
28	14 48.6	14 47.1	54 14.5	0.53	54 8.9	0.40	1 40.8	2.00	2.3
29	14 46.0	14 45.4	54 4.9	−0.26	54 2.6	−0.11	2 28.6	1.98	3.3
30	14 45.3	14 45.7	54 2.2	+0.05	54 3.9	+0.23	3 15.7	1.94	4.3
31	14 46.8	14 48.4	54 7.7	+0.42	54 13.9	+0.62	4 1.8	1.90	5.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 20 48.29	2.0898	S.18 39 13.5	0.069
1	18 22 53.65	2.0890	18 39 6.8	0.155
2	18 24 58.97	2.0883	18 38 54.9	0.241
3	18 27 4.24	2.0875	18 38 37.8	0.327
4	18 29 9.47	2.0867	18 38 15.6	0.413
5	18 31 14.64	2.0858	18 37 48.2	0.499
6	18 33 19.77	2.0851	18 37 15.7	0.585
7	18 35 24.85	2.0843	18 36 38.0	0.671
8	18 37 29.88	2.0834	18 35 55.2	0.757
9	18 39 34.86	2.0825	18 35 7.3	0.842
10	18 41 39.78	2.0817	18 34 14.2	0.927
11	18 43 44.65	2.0808	18 33 16.0	1.012
12	18 45 49.47	2.0799	18 32 12.8	1.097
13	18 47 54.24	2.0790	18 31 4.4	1.182
14	18 49 58.95	2.0781	18 29 51.0	1.267
15	18 52 3.60	2.0771	18 28 32.5	1.351
16	18 54 8.20	2.0762	18 27 8.9	1.435
17	18 56 12.74	2.0753	18 25 40.3	1.519
18	18 58 17.23	2.0743	18 24 6.6	1.603
19	19 0 21.65	2.0733	18 22 27.9	1.687
20	19 2 26.02	2.0723	18 20 44.1	1.771
21	19 4 30.33	2.0713	18 18 55.3	1.855
22	19 6 34.58	2.0704	18 17 1.5	1.938
23	19 8 38.78	2.0694	S.18 15 2.7	2.021

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 10 42.91	2.0684	S.18 12 59.0	2.104
1	19 12 46.98	2.0674	18 10 50.3	2.187
2	19 14 50.99	2.0664	18 8 36.6	2.270
3	19 16 54.94	2.0653	18 6 18.0	2.352
4	19 18 58.83	2.0643	18 3 54.4	2.434
5	19 21 2.66	2.0633	18 1 25.9	2.515
6	19 23 6.42	2.0623	17 58 52.6	2.597
7	19 25 10.13	2.0613	17 56 14.3	2.678
8	19 27 13.77	2.0602	17 53 31.2	2.759
9	19 29 17.35	2.0591	17 50 43.2	2.840
10	19 31 20.86	2.0581	17 47 50.4	2.921
11	19 33 24.31	2.0570	17 44 52.8	3.001
12	19 35 27.70	2.0559	17 41 50.3	3.082
13	19 37 31.03	2.0549	17 38 43.0	3.162
14	19 39 34.29	2.0539	17 35 30.9	3.242
15	19 41 37.49	2.0528	17 32 14.1	3.321
16	19 43 40.62	2.0517	17 28 52.5	3.400
17	19 45 43.69	2.0507	17 25 26.1	3.479
18	19 47 46.70	2.0496	17 21 55.0	3.558
19	19 49 49.65	2.0486	17 18 19.1	3.637
20	19 51 52.53	2.0475	17 14 38.5	3.716
21	19 53 55.35	2.0464	17 10 53.2	3.794
22	19 55 58.10	2.0453	17 7 3.2	3.872
23	19 58 0.79	2.0443	17 3 8.6	3.949
24	20 0 3.42	2.0433	S.16 59 9.4	4.026

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 0 3.42	2.0433	S.16 59 9.4	4.026
1	20 2 5.99	2.0423	16 55 5.5	4.103
2	20 4 8.49	2.0413	16 50 57.0	4.180
3	20 6 10.94	2.0403	16 46 43.9	4.256
4	20 8 13.32	2.0392	16 42 26.3	4.332
5	20 10 15.64	2.0382	16 38 4.1	4.408
6	20 12 17.90	2.0371	16 33 37.3	4.483
7	20 14 20.10	2.0361	16 29 6.0	4.558
8	20 16 22.23	2.0351	16 24 30.3	4.633
9	20 18 24.31	2.0342	16 19 50.0	4.708
10	20 20 26.33	2.0332	16 15 5.3	4.783
11	20 22 28.29	2.0322	16 10 16.1	4.857
12	20 24 30.19	2.0312	16 5 22.5	4.931
13	20 26 32.03	2.0303	16 0 24.5	5.004
14	20 28 33.82	2.0293	15 55 22.1	5.077
15	20 30 35.55	2.0284	15 50 15.3	5.150
16	20 32 37.23	2.0275	15 45 4.1	5.222
17	20 34 38.85	2.0266	15 39 48.6	5.294
18	20 36 40.42	2.0257	15 34 28.8	5.366
19	20 38 41.94	2.0248	15 29 4.6	5.438
20	20 40 43.40	2.0239	15 23 36.2	5.509
21	20 42 44.81	2.0231	15 18 3.5	5.580
22	20 44 46.17	2.0223	15 12 26.6	5.651
23	20 46 47.48	2.0214	S.15 6 45.4	5.721

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 48 48.74	2.0206	S.15 1 0.0	5.791
1	20 50 49.95	2.0198	14 55 10.4	5.861
2	20 52 51.11	2.0190	14 49 16.7	5.930
3	20 54 52.23	2.0183	14 43 18.8	5.999
4	20 56 53.30	2.0176	14 37 16.8	6.068
5	20 58 54.33	2.0168	14 31 10.7	6.136
6	21 0 55.31	2.0161	14 25 0.5	6.204
7	21 2 56.26	2.0154	14 18 46.3	6.271
8	21 4 57.16	2.0147	14 12 28.0	6.338
9	21 6 58.03	2.0141	14 6 5.7	6.405
10	21 8 58.85	2.0134	13 59 39.4	6.472
11	21 10 59.63	2.0128	13 53 9.1	6.538
12	21 13 0.38	2.0122	13 46 34.8	6.604
13	21 15 1.10	2.0117	13 39 56.6	6.669
14	21 17 1.78	2.0111	13 33 14.5	6.734
15	21 19 2.43	2.0105	13 26 28.5	6.799
16	21 21 3.04	2.0100	13 19 38.6	6.863
17	21 23 3.62	2.0095	13 12 44.9	6.927
18	21 25 4.18	2.0091	13 5 47.4	6.991
19	21 27 4.71	2.0087	12 58 46.0	7.054
20	21 29 5.22	2.0082	12 51 40.9	7.117
21	21 31 5.70	2.0078	12 44 32.0	7.179
22	21 33 6.16	2.0075	12 37 19.4	7.241
23	21 35 6.60	2.0072	12 30 3.0	7.303
24	21 37 7.02	2.0069	S.12 22 43.0	7.364

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 37 7.02	2.0069	S. 12 22 43.0	7.364
1	21 39 7.42	2.0066	12 15 19.3	7.425
2	21 41 7.81	2.0063	12 7 52.0	7.486
3	21 43 8.18	2.0061	12 0 21.1	7.546
4	21 45 8.54	2.0059	11 52 46.5	7.606
5	21 47 8.89	2.0057	11 45 8.4	7.665
6	21 49 9.22	2.0056	11 37 26.7	7.724
7	21 51 9.55	2.0054	11 29 41.6	7.782
8	21 53 9.87	2.0053	11 21 52.9	7.840
9	21 55 10.19	2.0053	11 14 0.8	7.898
10	21 57 10.50	2.0053	11 6 5.2	7.955
11	21 59 10.81	2.0053	10 58 6.2	8.012
12	22 1 11.13	2.0053	10 50 3.8	8.068
13	22 3 11.45	2.0053	10 41 58.0	8.124
14	22 5 11.77	2.0054	10 33 48.9	8.179
15	22 7 12.10	2.0055	10 25 36.5	8.234
16	22 9 12.43	2.0056	10 17 20.8	8.289
17	22 11 12.77	2.0058	10 9 1.8	8.343
18	22 13 13.13	2.0060	10 0 39.6	8.397
19	22 15 13.50	2.0063	9 52 14.1	8.451
20	22 17 13.89	2.0066	9 43 45.5	8.504
21	22 19 14.29	2.0069	9 35 13.7	8.556
22	22 21 14.72	2.0073	9 26 38.3	8.607
23	22 23 15.17	2.0077	S. 9 18 0.8	8.658

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 25 15.64	2.0081	S. 9 9 19.8	8.709
1	22 27 16.14	2.0085	9 0 35.7	8.759
2	22 29 16.66	2.0090	8 51 48.6	8.809
3	22 31 17.22	2.0096	8 42 58.5	8.859
4	22 33 17.81	2.0102	8 34 5.5	8.908
5	22 35 18.44	2.0108	8 25 9.5	8.957
6	22 37 19.10	2.0114	8 16 10.7	9.006
7	22 39 19.80	2.0120	8 7 9.0	9.052
8	22 41 20.54	2.0127	7 58 4.5	9.098
9	22 43 21.33	2.0135	7 48 57.2	9.144
10	22 45 22.16	2.0143	7 39 47.2	9.190
11	22 47 23.04	2.0152	7 30 34.4	9.236
12	22 49 23.98	2.0160	7 21 18.9	9.281
13	22 51 24.97	2.0169	7 12 0.7	9.326
14	22 53 26.01	2.0178	7 2 39.9	9.369
15	22 55 27.11	2.0188	6 53 16.5	9.412
16	22 57 28.27	2.0198	6 43 50.5	9.455
17	22 59 29.49	2.0209	6 34 22.0	9.497
18	23 1 30.78	2.0220	6 24 50.9	9.538
19	23 3 32.13	2.0231	6 15 17.4	9.579
20	23 5 33.55	2.0243	6 5 41.4	9.619
21	23 7 35.04	2.0255	5 56 3.0	9.659
22	23 9 36.61	2.0268	5 46 22.3	9.698
23	23 11 38.25	2.0281	5 36 39.2	9.737
24	23 13 39.98	2.0294	S. 5 26 53.8	9.776

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 13 39.98	2.0294	S. 5 26 53.8	9.776
1	23 15 41.79	2.0308	5 17 6.2	9.813
2	23 17 43.68	2.0322	5 7 16.3	9.849
3	23 19 45.66	2.0337	4 57 24.3	9.885
4	23 21 47.72	2.0352	4 47 30.2	9.920
5	23 23 49.88	2.0368	4 37 34.0	9.954
6	23 25 52.13	2.0384	4 27 35.7	9.988
7	23 27 54.48	2.0400	4 17 35.3	10.022
8	23 29 56.93	2.0418	4 7 33.0	10.055
9	23 31 59.48	2.0436	3 57 28.7	10.087
10	23 34 2.14	2.0452	3 47 22.6	10.118
11	23 36 4.90	2.0469	3 37 14.6	10.149
12	23 38 7.77	2.0488	3 27 4.7	10.179
13	23 40 10.75	2.0507	3 16 53.1	10.208
14	23 42 13.85	2.0526	3 6 39.7	10.237
15	23 44 17.06	2.0546	2 56 24.6	10.266
16	23 46 20.40	2.0566	2 46 7.8	10.293
17	23 48 23.86	2.0587	2 35 49.4	10.319
18	23 50 27.44	2.0608	2 25 29.5	10.345
19	23 52 31.15	2.0630	2 15 8.0	10.370
20	23 54 35.00	2.0652	2 4 45.1	10.394
21	23 56 38.98	2.0674	1 54 20.7	10.418
22	23 58 43.09	2.0697	1 43 54.9	10.441
23	0 0 47.34	2.0720	S. 1 33 27.8	10.463

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 2 51.73	2.0744	S. 1 22 59.4	10.484
1	0 4 56.27	2.0768	1 12 29.8	10.504
2	0 7 0.95	2.0793	1 1 58.9	10.524
3	0 9 5.78	2.0818	0 51 26.9	10.543
4	0 11 10.76	2.0843	0 40 53.8	10.561
5	0 13 15.90	2.0869	0 30 19.6	10.578
6	0 15 21.19	2.0896	0 19 44.5	10.594
7	0 17 26.64	2.0923	S. 0 9 8.4	10.609
8	0 19 32.26	2.0950	N. 0 1 28.6	10.623
9	0 21 38.04	2.0978	0 12 6.5	10.637
10	0 23 43.99	2.1005	0 22 45.1	10.650
11	0 25 50.10	2.1033	0 33 24.5	10.662
12	0 27 56.39	2.1062	0 44 4.5	10.673
13	0 30 2.85	2.1092	0 54 45.2	10.683
14	0 32 9.49	2.1122	1 5 26.5	10.692
15	0 34 16.31	2.1153	1 16 8.3	10.701
16	0 36 23.32	2.1183	1 26 50.6	10.708
17	0 38 30.51	2.1214	1 37 33.3	10.716
18	0 40 37.89	2.1246	1 48 16.4	10.720
19	0 42 45.46	2.1278	1 58 59.7	10.724
20	0 44 53.22	2.1310	2 9 43.3	10.728
21	0 47 1.18	2.1343	2 20 27.1	10.731
22	0 49 9.33	2.1376	2 31 11.0	10.732
23	0 51 17.68	2.1409	2 41 55.0	10.733
24	0 53 26.24	2.1443	N. 2 52 39.0	10.733

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 53 26.24	2.1443	N. 2 52 39.0	10.733
1	0 55 35.00	2.1478	3 3 23.0	10.732
2	0 57 43.97	2.1513	3 14 6.8	10.729
3	0 59 53.15	2.1548	3 24 50.4	10.725
4	1 2 2.55	2.1583	3 35 33.8	10.720
5	1 4 12.16	2.1619	3 46 16.9	10.715
6	1 6 21.98	2.1656	3 56 59.6	10.709
7	1 8 32.02	2.1693	4 7 41.9	10.701
8	1 10 42.29	2.1730	4 18 23.6	10.692
9	1 12 52.78	2.1768	4 29 4.8	10.682
10	1 15 3.50	2.1805	4 39 45.4	10.671
11	1 17 14.44	2.1843	4 50 25.3	10.658
12	1 19 25.62	2.1882	5 1 4.4	10.644
13	1 21 37.03	2.1921	5 11 42.7	10.630
14	1 23 48.67	2.1960	5 22 20.1	10.615
15	1 26 0.55	2.2000	5 32 56.5	10.598
16	1 28 12.67	2.2040	5 43 31.9	10.580
17	1 30 25.03	2.2080	5 54 6.2	10.562
18	1 32 37.63	2.2121	6 4 39.3	10.542
19	1 34 50.48	2.2162	6 15 11.2	10.521
20	1 37 3.57	2.2203	6 25 41.8	10.499
21	1 39 16.91	2.2245	6 36 11.0	10.475
22	1 41 30.51	2.2286	6 46 38.8	10.450
23	1 43 44.35	2.2328	N. 6 57 5.0	10.423

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 45 58.45	2.2371	N. 7 7 29.6	10.395
1	1 48 12.81	2.2414	7 17 52.5	10.367
2	1 50 27.42	2.2457	7 28 13.7	10.338
3	1 52 42.29	2.2500	7 38 33.0	10.307
4	1 54 57.42	2.2544	7 48 50.5	10.276
5	1 57 12.81	2.2588	7 59 6.0	10.241
6	1 59 28.47	2.2631	8 9 19.4	10.206
7	2 1 44.39	2.2675	8 19 30.7	10.170
8	2 4 0.57	2.2719	8 29 39.8	10.132
9	2 6 17.02	2.2764	8 39 46.6	10.093
10	2 8 33.74	2.2809	8 49 51.0	10.053
11	2 10 50.73	2.2854	8 59 53.0	10.013
12	2 13 7.99	2.2899	9 9 52.5	9.971
13	2 15 25.52	2.2944	9 19 49.4	9.926
14	2 17 43.32	2.2990	9 29 43.6	9.881
15	2 20 1.40	2.3036	9 39 35.1	9.835
16	2 22 19.75	2.3082	9 49 23.8	9.787
17	2 24 38.38	2.3128	9 59 9.6	9.738
18	2 26 57.28	2.3174	10 8 52.4	9.688
19	2 29 16.46	2.3219	10 18 32.1	9.636
20	2 31 35.91	2.3265	10 28 8.7	9.583
21	2 33 55.64	2.3312	10 37 42.1	9.529
22	2 36 15.65	2.3358	10 47 12.2	9.473
23	2 38 35.94	2.3405	10 56 38.9	9.416
24	2 40 56.51	2.3451	N.11 6 2.1	9.356

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 40 56.51	2.3451	N.11 6 2.1	9.356
1	2 43 17.36	2.3498	11 15 21.8	9.296
2	2 45 38.48	2.3544	11 24 37.9	9.237
3	2 47 59.88	2.3590	11 33 50.2	9.174
4	2 50 21.56	2.3636	11 42 58.8	9.110
5	2 52 43.52	2.3683	11 52 3.5	9.045
6	2 55 5.75	2.3729	12 1 4.2	8.979
7	2 57 28.26	2.3775	12 10 1.0	8.912
8	2 59 51.05	2.3821	12 18 53.6	8.843
9	3 2 14.11	2.3867	12 27 42.0	8.772
10	3 4 37.45	2.3913	12 36 26.2	8.700
11	3 7 1.06	2.3958	12 45 6.1	8.627
12	3 9 24.95	2.4004	12 53 41.5	8.553
13	3 11 49.11	2.4049	13 2 12.4	8.477
14	3 14 13.54	2.4095	13 10 38.7	8.400
15	3 16 38.24	2.4140	13 19 0.3	8.321
16	3 19 3.22	2.4185	13 27 17.2	8.241
17	3 21 28.46	2.4229	13 35 29.2	8.160
18	3 23 53.97	2.4274	13 43 36.4	8.078
19	3 26 19.74	2.4318	13 51 38.6	7.994
20	3 28 45.78	2.4363	13 59 35.7	7.909
21	3 31 12.08	2.4406	14 7 27.7	7.823
22	3 33 38.64	2.4448	14 15 14.4	7.736
23	3 36 5.46	2.4491	N.14 22 55.9	7.647

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 38 32.53	2.4534	N.14 30 32.0	7.557
1	3 40 59.86	2.4576	14 38 2.7	7.465
2	3 43 27.44	2.4618	14 45 27.8	7.372
3	3 45 55.27	2.4659	14 52 47.4	7.279
4	3 48 23.35	2.4700	15 0 1.3	7.184
5	3 50 51.67	2.4741	15 7 9.4	7.088
6	3 53 20.24	2.4781	15 14 11.7	6.991
7	3 55 49.05	2.4821	15 21 8.2	6.893
8	3 58 18.09	2.4860	15 27 58.8	6.794
9	4 0 47.37	2.4899	15 34 43.5	6.693
10	4 3 16.88	2.4937	15 41 22.0	6.591
11	4 5 46.61	2.4974	15 47 54.4	6.487
12	4 8 16.57	2.5011	15 54 20.5	6.383
13	4 10 46.75	2.5048	16 0 40.3	6.277
14	4 13 17.15	2.5084	16 6 53.7	6.171
15	4 15 47.76	2.5119	16 13 0.7	6.063
16	4 18 18.58	2.5154	16 19 1.3	5.954
17	4 20 49.61	2.5188	16 24 55.3	5.845
18	4 23 20.84	2.5221	16 30 42.7	5.734
19	4 25 52.27	2.5254	16 36 23.4	5.623
20	4 28 23.89	2.5286	16 41 57.3	5.510
21	4 30 55.70	2.5318	16 47 24.4	5.396
22	4 33 27.70	2.5348	16 52 44.7	5.280
23	4 35 59.88	2.5378	16 57 58.1	5.165
24	4 38 32.24	2.5408	N.17 3 4.6	5.049

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 38 32.24	2.5408	N.17 3 4.6	5.049
1	4 41 4.78	2.5437	17 8 4.0	4.932
2	4 43 37.48	2.5464	17 12 56.4	4.814
3	4 46 10.35	2.5491	17 17 41.7	4.695
4	4 48 43.37	2.5517	17 22 19.8	4.575
5	4 51 16.55	2.5543	17 26 50.7	4.454
6	4 53 49.88	2.5567	17 31 14.3	4.333
7	4 56 23.35	2.5590	17 35 30.6	4.211
8	4 58 56.96	2.5613	17 39 39.6	4.088
9	5 1 30.70	2.5635	17 43 41.2	3.964
10	5 4 4.58	2.5656	17 47 35.3	3.840
11	5 6 38.58	2.5677	17 51 22.0	3.716
12	5 9 12.70	2.5695	17 55 1.2	3.590
13	5 11 46.93	2.5713	17 58 32.8	3.464
14	5 14 21.27	2.5731	18 1 56.9	3.337
15	5 16 55.71	2.5748	18 5 13.3	3.209
16	5 19 30.25	2.5763	18 8 22.0	3.081
17	5 22 4.88	2.5778	18 11 23.0	2.953
18	5 24 39.59	2.5791	18 14 16.3	2.824
19	5 27 14.38	2.5804	18 17 1.9	2.695
20	5 29 49.24	2.5816	18 19 39.7	2.565
21	5 32 24.17	2.5828	18 22 9.7	2.435
22	5 34 59.17	2.5837	18 24 31.9	2.304
23	5 37 34.22	2.5846	N.18 26 46.2	2.173

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 40 9.32	2.5854	N.18 28 52.7	2.042
1	5 42 44.47	2.5861	18 30 51.3	1.911
2	5 45 19.65	2.5867	18 32 42.0	1.779
3	5 47 54.87	2.5872	18 34 24.8	1.647
4	5 50 30.11	2.5875	18 35 59.6	1.516
5	5 53 5.37	2.5878	18 37 26.5	1.382
6	5 55 40.65	2.5880	18 38 45.4	1.250
7	5 58 15.93	2.5881	18 39 56.4	1.117
8	6 0 51.22	2.5881	18 40 59.4	0.984
9	6 3 26.51	2.5880	18 41 54.4	0.851
10	6 6 1.78	2.5877	18 42 41.5	0.718
11	6 8 37.04	2.5874	18 43 20.6	0.585
12	6 11 12.27	2.5870	18 43 51.7	0.452
13	6 13 47.48	2.5865	18 44 14.8	0.319
14	6 16 22.65	2.5859	18 44 30.0	0.186
15	6 18 57.78	2.5852	18 44 37.2	0.053
16	6 21 32.87	2.5843	18 44 36.4	0.080
17	6 24 7.90	2.5834	18 44 27.6	0.212
18	6 26 42.88	2.5824	18 44 10.9	0.345
19	6 29 17.79	2.5813	18 43 46.3	0.477
20	6 31 52.64	2.5801	18 43 13.7	0.609
21	6 34 27.41	2.5788	18 42 33.2	0.741
22	6 37 2.10	2.5774	18 41 44.8	0.872
23	6 39 36.70	2.5759	18 40 48.5	1.003
24	6 42 11.21	2.5744	N.18 39 44.4	1.134

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 42 11.21	2.5744	N.18 39 44.4	1.134
1	6 44 45.63	2.5728	18 38 32.4	1.265
2	6 47 19.94	2.5710	18 37 12.6	1.395
3	6 49 54.14	2.5691	18 35 45.0	1.525
4	6 52 28.23	2.5672	18 34 9.6	1.654
5	6 55 2.20	2.5652	18 32 26.5	1.783
6	6 57 36.05	2.5630	18 30 35.6	1.911
7	7 0 9.77	2.5608	18 28 37.1	2.039
8	7 2 43.35	2.5586	18 26 30.9	2.166
9	7 5 16.80	2.5563	18 24 17.1	2.293
10	7 7 50.10	2.5538	18 21 55.7	2.420
11	7 10 23.25	2.5513	18 19 26.7	2.546
12	7 12 56.25	2.5487	18 16 50.2	2.671
13	7 15 29.09	2.5460	18 14 6.2	2.796
14	7 18 1.77	2.5432	18 11 14.7	2.920
15	7 20 34.28	2.5403	18 8 15.8	3.043
16	7 23 6.61	2.5374	18 5 9.5	3.166
17	7 25 38.77	2.5344	18 1 55.9	3.288
18	7 28 10.74	2.5314	17 58 35.0	3.409
19	7 30 42.53	2.5283	17 55 6.8	3.530
20	7 33 14.13	2.5251	17 51 31.4	3.650
21	7 35 45.54	2.5218	17 47 48.8	3.769
22	7 38 16.75	2.5185	17 43 59.1	3.887
23	7 40 47.76	2.5151	N.17 40 2.4	4.004

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 43 18.56	2.5117	N.17 35 58.6	4.121
1	7 45 49.16	2.5082	17 31 47.9	4.237
2	7 48 19.54	2.5046	17 27 30.2	4.352
3	7 50 49.70	2.5009	17 23 5.6	4.466
4	7 53 19.65	2.4973	17 18 34.3	4.579
5	7 55 49.38	2.4936	17 13 56.2	4.691
6	7 58 18.88	2.4898	17 9 11.4	4.802
7	8 0 48.15	2.4859	17 4 20.0	4.913
8	8 3 17.19	2.4821	16 59 21.9	5.022
9	8 5 46.00	2.4782	16 54 17.3	5.130
10	8 8 14.57	2.4742	16 49 6.3	5.238
11	8 10 42.90	2.4702	16 43 48.8	5.345
12	8 13 10.99	2.4662	16 38 24.9	5.451
13	8 15 38.84	2.4621	16 32 54.7	5.555
14	8 18 6.44	2.4580	16 27 18.3	5.659
15	8 20 33.79	2.4538	16 21 35.7	5.762
16	8 23 0.89	2.4496	16 15 46.9	5.864
17	8 25 27.74	2.4454	16 9 52.1	5.964
18	8 27 54.34	2.4412	16 3 51.2	6.064
19	8 30 20.68	2.4369	15 57 44.4	6.163
20	8 32 46.77	2.4326	15 51 31.6	6.261
21	8 35 12.60	2.4283	15 45 13.0	6.358
22	8 37 38.16	2.4240	15 38 48.7	6.454
23	8 40 3.47	2.4196	15 32 18.7	6.548
24	8 42 28.51	2.4152	N.15 25 43.1	6.641

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 42 28.51	2.4152	N.15 25 43.1	6.641
1	8 44 53.29	2.4108	15 19 1.9	6.733
2	8 47 17.80	2.4064	15 12 15.2	6.823
3	8 49 42.05	2.4019	15 5 23.1	6.913
4	8 52 6.03	2.3975	14 58 25.6	7.002
5	8 54 29.74	2.3930	14 51 22.8	7.090
6	8 56 53.19	2.3886	14 44 14.8	7.177
7	8 59 16.37	2.3841	14 37 1.6	7.262
8	9 1 39.28	2.3796	14 29 43.3	7.346
9	9 4 1.92	2.3751	14 22 19.9	7.430
10	9 6 24.29	2.3706	14 14 51.6	7.513
11	9 8 46.39	2.3662	14 7 18.4	7.594
12	9 11 8.23	2.3617	13 59 40.3	7.674
13	9 13 29.79	2.3572	13 51 57.4	7.753
14	9 15 51.09	2.3527	13 44 9.9	7.831
15	9 18 12.12	2.3483	13 36 17.7	7.908
16	9 20 32.88	2.3438	13 28 21.0	7.984
17	9 22 53.37	2.3393	13 20 19.8	8.058
18	9 25 13.59	2.3348	13 12 14.1	8.131
19	9 27 33.55	2.3304	13 4 4.1	8.203
20	9 29 53.24	2.3259	12 55 49.7	8.274
21	9 32 12.66	2.3215	12 47 31.1	8.344
22	9 34 31.82	2.3171	12 39 8.4	8.413
23	9 36 50.72	2.3128	N.12 30 41.6	8.481

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 39 9.35	2.3083	N.12 22 10.7	8.547
1	9 41 27.72	2.3039	12 13 35.9	8.612
2	9 43 45.82	2.2996	12 4 57.2	8.676
3	9 46 3.66	2.2953	11 56 14.6	8.740
4	9 48 21.25	2.2910	11 47 28.3	8.803
5	9 50 38.58	2.2867	11 38 38.3	8.864
6	9 52 55.65	2.2824	11 29 44.6	8.924
7	9 55 12.46	2.2781	11 20 47.4	8.984
8	9 57 29.02	2.2739	11 11 46.7	9.041
9	9 59 45.33	2.2697	11 2 42.6	9.097
10	10 2 1.38	2.2655	10 53 35.1	9.153
11	10 4 17.19	2.2614	10 44 24.3	9.208
12	10 6 32.75	2.2573	10 35 10.2	9.261
13	10 8 48.06	2.2532	10 25 53.0	9.313
14	10 11 3.13	2.2492	10 16 32.7	9.364
15	10 13 17.96	2.2452	10 7 9.4	9.413
16	10 15 32.55	2.2412	9 57 43.2	9.462
17	10 17 46.90	2.2372	9 48 14.0	9.510
18	10 20 1.01	2.2332	9 38 42.0	9.557
19	10 22 14.89	2.2293	9 29 7.2	9.603
20	10 24 28.53	2.2255	9 19 29.6	9.648
21	10 26 41.94	2.2217	9 9 49.4	9.692
22	10 28 55.13	2.2179	9 0 6.6	9.734
23	10 31 8.09	2.2142	8 50 21.3	9.775
24	10 33 20.83	2.2105	N. 8 40 33.6	9.816

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 33 20.83	2.2106	N. 8 40 33.6	9.815
1	10 35 33.35	2.2068	8 30 43.5	9.855
2	10 37 45.64	2.2031	8 20 51.0	9.894
3	10 39 57.71	2.1994	8 10 56.3	9.931
4	10 42 9.57	2.1959	8 0 59.3	9.967
5	10 44 21.22	2.1924	7 51 0.2	10.003
6	10 46 32.66	2.1889	7 40 59.0	10.037
7	10 48 43.89	2.1854	7 30 55.8	10.069
8	10 50 54.91	2.1820	7 20 50.7	10.101
9	10 53 5.73	2.1787	7 10 43.7	10.132
10	10 55 16.35	2.1754	7 0 34.8	10.163
11	10 57 26.77	2.1721	6 50 24.2	10.192
12	10 59 37.00	2.1689	6 40 11.8	10.220
13	11 1 47.04	2.1657	6 29 57.8	10.247
14	11 3 56.88	2.1625	6 19 42.3	10.273
15	11 6 6.53	2.1593	6 9 25.2	10.298
16	11 8 16.00	2.1563	5 59 6.6	10.323
17	11 10 25.28	2.1533	5 48 46.6	10.347
18	11 12 34.39	2.1503	5 38 25.2	10.369
19	11 14 43.32	2.1474	5 28 2.4	10.390
20	11 16 52.08	2.1445	5 17 38.4	10.411
21	11 19 0.67	2.1417	5 7 13.2	10.430
22	11 21 9.08	2.1389	4 56 46.8	10.448
23	11 23 17.33	2.1361	N. 4 46 19.4	10.466

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 25 25.41	2.1334	N. 4 35 51.0	10.481
1	11 27 33.33	2.1308	4 25 21.6	10.497
2	11 29 41.10	2.1282	4 14 51.4	10.511
3	11 31 48.71	2.1256	4 4 20.3	10.524
4	11 33 56.17	2.1230	3 53 48.5	10.536
5	11 36 3.47	2.1205	3 43 15.9	10.548
6	11 38 10.63	2.1181	3 32 42.7	10.560
7	11 40 17.65	2.1158	3 22 8.8	10.570
8	11 42 24.52	2.1134	3 11 34.3	10.579
9	11 44 31.25	2.1111	3 0 59.3	10.587
10	11 46 37.85	2.1089	2 50 23.9	10.594
11	11 48 44.32	2.1067	2 39 48.1	10.600
12	11 50 50.65	2.1045	2 29 11.9	10.606
13	11 52 56.86	2.1024	2 18 35.4	10.610
14	11 55 2.94	2.1003	2 7 58.7	10.614
15	11 57 8.90	2.0983	1 57 21.8	10.617
16	11 59 14.74	2.0963	1 46 44.7	10.619
17	12 1 20.46	2.0944	1 36 7.5	10.619
18	12 3 26.07	2.0926	1 25 30.4	10.619
19	12 5 31.57	2.0908	1 14 53.3	10.618
20	12 7 36.96	2.0890	1 4 16.2	10.617
21	12 9 42.24	2.0872	0 53 39.3	10.614
22	12 11 47.42	2.0855	0 43 2.5	10.610
23	12 13 52.50	2.0838	0 32 26.0	10.606
24	12 15 57.48	2.0822	N. 0 21 49.8	10.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 15 57.48	2.0822	N. 0 21 49.8	10.601
1	12 18 2.37	2.0807	0 11 13.9	10.595
2	12 20 7.16	2.0792	N. 0 0 38.4	10.588
3	12 22 11.86	2.0777	S. 0 9 56.6	10.580
4	12 24 16.48	2.0762	0 20 31.2	10.572
5	12 26 21.01	2.0748	0 31 5.2	10.563
6	12 28 25.46	2.0735	0 41 38.7	10.553
7	12 30 29.83	2.0722	0 52 11.5	10.542
8	12 32 34.13	2.0710	1 2 43.7	10.530
9	12 34 38.35	2.0698	1 13 15.1	10.517
10	12 36 42.50	2.0686	1 23 45.8	10.503
11	12 38 46.58	2.0675	1 34 15.6	10.489
12	12 40 50.60	2.0664	1 44 44.6	10.474
13	12 42 54.55	2.0653	1 55 12.6	10.458
14	12 44 58.44	2.0643	2 5 39.6	10.441
15	12 47 2.27	2.0633	2 16 5.6	10.424
16	12 49 6.04	2.0624	2 26 30.5	10.406
17	12 51 9.76	2.0616	2 36 54.3	10.387
18	12 53 13.43	2.0608	2 47 16.9	10.367
19	12 55 17.05	2.0600	2 57 38.3	10.347
20	12 57 20.63	2.0592	3 7 58.5	10.325
21	12 59 24.16	2.0585	3 18 17.3	10.303
22	13 1 27.65	2.0578	3 28 34.8	10.280
23	13 3 31.10	2.0572	S. 3 38 50.9	10.256

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 5 34.51	2.0566	S. 3 49 5.5	10.231
1	13 7 37.89	2.0560	3 59 18.6	10.206
2	13 9 41.23	2.0555	4 9 30.2	10.180
3	13 11 44.54	2.0550	4 19 40.2	10.153
4	13 13 47.83	2.0546	4 29 48.5	10.125
5	13 15 51.09	2.0542	4 39 55.2	10.097
6	13 17 54.33	2.0538	4 50 0.1	10.068
7	13 19 57.54	2.0534	5 0 3.3	10.038
8	13 22 0.74	2.0531	5 10 4.7	10.007
9	13 24 3.92	2.0529	5 20 4.2	9.976
10	13 26 7.09	2.0526	5 30 1.8	9.944
11	13 28 10.24	2.0524	5 39 57.4	9.911
12	13 30 13 38	2.0523	5 49 51.1	9.877
13	13 32 16.51	2.0522	5 59 42.7	9.843
14	13 34 19.64	2.0520	6 9 32.2	9.808
15	13 36 22.76	2.0519	6 19 19.6	9.772
16	13 38 25.87	2.0519	6 29 4.8	9.735
17	13 40 28.98	2.0519	6 38 47.8	9.698
18	13 42 32.10	2.0519	6 48 28.5	9.660
19	13 44 35.22	2.0520	6 58 6.9	9.621
20	13 46 38.34	2.0521	7 7 43.0	9.582
21	13 48 41.47	2.0522	7 17 16.7	9.542
22	13 50 44.60	2.0523	7 26 48.0	9.501
23	13 52 47.74	2.0525	7 36 16.8	9.459
24	13 54 50.90	2.0526	S. 7 45 43.1	9.417

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 54 50.90	2.0526	S. 7 45 43.1	9.417
1	13 56 54.06	2.0528	7 55 6.8	9.374
2	13 58 57.24	2.0531	8 4 28.0	9.330
3	14 1 0.44	2.0534	8 13 46.5	9.286
4	14 3 3.65	2.0537	8 23 2.3	9.241
5	14 5 6.88	2.0540	8 32 15.4	9.195
6	14 7 10.13	2.0543	8 41 25.7	9.149
7	14 9 13.40	2.0547	8 50 33.3	9.102
8	14 11 16.69	2.0551	8 59 38.0	9.054
9	14 13 20.01	2.0555	9 8 39.8	9.006
10	14 15 23.35	2.0559	9 17 38.7	8.957
11	14 17 26.72	2.0564	9 26 34.6	8.908
12	14 19 30.12	2.0569	9 35 27.6	8.858
13	14 21 33.55	2.0574	9 44 17.5	8.807
14	14 23 37.01	2.0579	9 53 4.3	8.755
15	14 25 40.50	2.0584	10 1 48.0	8.703
16	14 27 44.02	2.0590	10 10 28.6	8.650
17	14 29 47.58	2.0596	10 19 6.0	8.596
18	14 31 51.17	2.0602	10 27 40.1	8.542
19	14 33 54.80	2.0608	10 36 11.0	8.487
20	14 35 58.46	2.0614	10 44 38.5	8.431
21	14 38 2.17	2.0621	10 53 2.7	8.375
22	14 40 5.91	2.0627	11 1 23.5	8.318
23	14 42 9.69	2.0633	S.11 9 40.9	8.261

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 44 13.51	2.0640	S.11 17 54.9	8.203
1	14 46 17.37	2.0648	11 26 5.4	8.145
2	14 48 21.28	2.0654	11 34 12.3	8.086
3	14 50 25.22	2.0661	11 42 15.6	8.026
4	14 52 29.21	2.0669	11 50 15.4	7.966
5	14 54 33.24	2.0676	11 58 11.5	7.905
6	14 56 37.32	2.0684	12 6 4.0	7.843
7	14 58 41.44	2.0691	12 13 52.7	7.781
8	15 0 45.61	2.0698	12 21 37.7	7.718
9	15 2 49.82	2.0706	12 29 18.9	7.655
10	15 4 54.08	2.0713	12 36 56.3	7.592
11	15 6 58.38	2.0721	12 44 29.9	7.528
12	15 9 2.73	2.0729	12 51 59.6	7.463
13	15 11 7.13	2.0737	12 59 25.4	7.398
14	15 13 11.57	2.0745	13 6 47.3	7.331
15	15 15 16.07	2.0753	13 14 5.2	7.264
16	15 17 20.61	2.0761	13 21 19.0	7.197
17	15 19 25.20	2.0769	13 28 28.8	7.130
18	15 21 29.84	2.0777	13 35 34.6	7.062
19	15 23 34.53	2.0785	13 42 36.2	6.993
20	15 25 39.26	2.0793	13 49 33.7	6.924
21	15 27 44.04	2.0801	13 56 27.0	6.854
22	15 29 48.87	2.0809	14 3 16.2	6.784
23	15 31 53.75	2.0818	14 10 1.1	6.713
24	15 33 58.68	2.0826	S.14 16 41.8	6.642

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 33 58.68	2.0825	S.14 16 41.8	6.642	0	17 14 41.23	2.1077	S.18 5 51.3	2.782
1	15 36 3.66	2.0833	14 23 18.2	6.571	1	17 16 47.69	2.1077	18 8 35.6	2.696
2	15 38 8.68	2.0841	14 29 50.3	6.499	2	17 18 54.15	2.1078	18 11 14.7	2.608
3	15 40 13.75	2.0849	14 36 18.0	6.426	3	17 21 0.62	2.1078	18 13 48.6	2.521
4	15 42 18.87	2.0857	14 42 41.4	6.353	4	17 23 7.08	2.1078	18 16 17.2	2.434
5	15 44 24.04	2.0865	14 49 0.4	6.280	5	17 25 13.54	2.1077	18 18 40.6	2.347
6	15 46 29.25	2.0873	14 55 15.0	6.206	6	17 27 20.00	2.1076	18 20 58.8	2.259
7	15 48 34.51	2.0881	15 1 25.1	6.132	7	17 29 26.45	2.1074	18 23 11.7	2.171
8	15 50 39.82	2.0889	15 7 30.8	6.057	8	17 31 32.89	2.1073	18 25 19.3	2.084
9	15 52 45.17	2.0896	15 13 32.0	5.982	9	17 33 39.32	2.1072	18 27 21.7	1.996
10	15 54 50.57	2.0904	15 19 28.6	5.906	10	17 35 45.75	2.1070	18 29 18.8	1.909
11	15 56 56.01	2.0911	15 25 20.7	5.830	11	17 37 52.17	2.1068	18 31 10.7	1.821
12	15 59 1.50	2.0918	15 31 8.2	5.753	12	17 39 58.57	2.1066	18 32 57.3	1.733
13	16 1 7.03	2.0925	15 36 51.1	5.676	13	17 42 4.96	2.1063	18 34 38.6	1.645
14	16 3 12.60	2.0932	15 42 29.3	5.599	14	17 44 11.33	2.1061	18 36 14.7	1.557
15	16 5 18.21	2.0939	15 48 2.9	5.521	15	17 46 17.68	2.1058	18 37 45.4	1.468
16	16 7 23.87	2.0946	15 53 31.9	5.443	16	17 48 24.02	2.1055	18 39 10.9	1.380
17	16 9 29.57	2.0953	15 58 56.1	5.364	17	17 50 30.34	2.1051	18 40 31.0	1.292
18	16 11 35.31	2.0960	16 4 15.6	5.286	18	17 52 36.63	2.1047	18 41 45.9	1.204
19	16 13 41.09	2.0966	16 9 30.4	5.207	19	17 54 42.90	2.1043	18 42 55.5	1.116
20	16 15 46.90	2.0972	16 14 40.4	5.128	20	17 56 49.14	2.1038	18 43 59.8	1.028
21	16 17 52.75	2.0978	16 19 45.7	5.048	21	17 58 55.35	2.1033	18 44 58.8	0.939
22	16 19 58.64	2.0985	16 24 46.1	4.967	22	18 1 1.54	2.1028	18 45 52.5	0.851
23	16 22 4.57	2.0991	S.16 29 41.7	4.886	23	18 3 7.70	2.1023	S.18 46 40.9	0.763
	TUESDAY 26.					THURSDAY 28.			
0	16 24 10.53	2.0997	S.16 34 32.4	4.805	0	18 5 13.82	2.1018	S.18 47 24.1	0.675
1	16 26 16.53	2.1003	16 39 18.3	4.724	1	18 7 19.91	2.1013	18 48 2.0	0.587
2	16 28 22.56	2.1008	16 43 59.3	4.642	2	18 9 25.97	2.1007	18 48 34.6	0.499
3	16 30 28.62	2.1013	16 48 35.4	4.560	3	18 11 31.99	2.1000	18 49 1.9	0.412
4	16 32 34.71	2.1018	16 53 6.5	4.478	4	18 13 37.97	2.0994	18 49 24.0	0.324
5	16 34 40.83	2.1023	16 57 32.7	4.395	5	18 15 43.92	2.0988	18 49 40.8	0.236
6	16 36 46.98	2.1028	17 1 54.0	4.312	6	18 17 49.82	2.0981	18 49 52.3	0.148
7	16 38 53.16	2.1032	17 6 10.2	4.229	7	18 19 55.68	2.0973	18 49 58.6	0.061
8	16 40 59.36	2.1035	17 10 21.5	4.146	8	18 22 1.49	2.0966	18 49 59.6	0.027
9	16 43 5.59	2.1040	17 14 27.7	4.062	9	18 24 7.26	2.0958	18 49 55.4	0.114
10	16 45 11.84	2.1044	17 18 29.0	3.979	10	18 26 12.98	2.0950	18 49 45.9	0.201
11	16 47 18.12	2.1048	17 22 25.2	3.895	11	18 28 18.65	2.0942	18 49 31.2	0.288
12	16 49 24.42	2.1052	17 26 16.4	3.811	12	18 30 24.28	2.0934	18 49 11.3	0.376
13	16 51 30.74	2.1055	17 30 2.5	3.726	13	18 32 29.86	2.0925	18 48 46.2	0.463
14	16 53 37.08	2.1058	17 33 43.5	3.641	14	18 34 35.38	2.0916	18 48 15.8	0.549
15	16 55 43.44	2.1061	17 37 19.4	3.556	15	18 36 40.85	2.0907	18 47 40.3	0.636
16	16 57 49.81	2.1064	17 40 50.2	3.471	16	18 38 46.26	2.0898	18 46 59.5	0.723
17	16 59 56.20	2.1066	17 44 15.9	3.385	17	18 40 51.62	2.0888	18 46 13.5	0.809
18	17 2 2.60	2.1068	17 47 36.4	3.300	18	18 42 56.92	2.0879	18 45 22.4	0.896
19	17 4 9.01	2.1070	17 50 51.8	3.214	19	18 45 2.17	2.0869	18 44 26.1	0.982
20	17 6 15.44	2.1072	17 54 2.1	3.128	20	18 47 7.35	2.0859	18 43 24.6	1.068
21	17 8 21.88	2.1073	17 57 7.2	3.042	21	18 49 12.47	2.0848	18 42 18.0	1.153
22	17 10 28.32	2.1075	18 0 7.1	2.956	22	18 51 17.53	2.0838	18 41 6.2	1.239
23	17 12 34.77	2.1076	18 3 1.8	2.869	23	18 53 22.53	2.0828	18 39 49.3	1.324
24	17 14 41.23	2.1077	S.18 5 51.3	2.782	24	18 55 27.46	2.0817	S.18 38 27.2	1.410

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 29.					SATURDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 55 27.46	2.0817	S.18 38 27.2	1.410	0	19 45 3.78	2.0509	S.17 40 36.8	3.386
1	18 57 32.33	2.0806	18 37 0.0	1.495	1	19 47 6.79	2.0495	17 37 11.3	3.465
2	18 59 37.13	2.0795	18 35 27.8	1.580	2	19 49 9.72	2.0481	17 33 41.0	3.544
3	19 1 41.86	2.0783	18 33 50.5	1.664	3	19 51 12.56	2.0466	17 30 6.1	3.622
4	19 3 46.52	2.0771	18 32 8.1	1.749	4	19 53 15.31	2.0452	17 26 26.4	3.700
5	19 5 51.11	2.0759	18 30 20.7	1.833	5	19 55 17.98	2.0438	17 22 42.1	3.778
6	19 7 55.63	2.0747	18 28 28.2	1.917	6	19 57 20.56	2.0424	17 18 53.1	3.856
7	19 10 0.08	2.0735	18 26 30.7	2.001	7	19 59 23.06	2.0409	17 14 59.5	3.933
8	19 12 4.45	2.0723	18 24 28.1	2.085	8	20 1 25.47	2.0395	17 11 1.2	4.010
9	19 14 8.75	2.0710	18 22 20.5	2.168	9	20 3 27.79	2.0380	17 6 58.3	4.086
10	19 16 12.97	2.0698	18 20 8.0	2.251	10	20 5 30.03	2.0366	17 2 50.9	4.162
11	19 18 17.12	2.0685	18 17 50.5	2.333	11	20 7 32.18	2.0352	16 58 39.0	4.237
12	19 20 21.19	2.0672	18 15 28.0	2.416	12	20 9 34.25	2.0338	16 54 22.5	4.312
13	19 22 25.18	2.0659	18 13 0.6	2.498	13	20 11 36.23	2.0323	16 50 1.5	4.386
14	19 24 29.10	2.0646	18 10 28.2	2.580	14	20 13 38.12	2.0308	16 45 36.0	4.463
15	19 26 32.94	2.0633	18 7 50.9	2.662	15	20 15 39.92	2.0293	16 41 6.0	4.537
16	19 28 36.69	2.0620	18 5 8.7	2.744	16	20 17 41.64	2.0279	16 36 31.6	4.611
17	19 30 40.37	2.0606	18 2 21.6	2.825	17	20 19 43.27	2.0265	16 31 52.8	4.684
18	19 32 43.96	2.0592	17 59 29.7	2.906	18	20 21 44.82	2.0251	16 27 9.5	4.757
19	19 34 47.47	2.0578	17 56 32.9	2.987	19	20 23 46.28	2.0236	16 22 21.8	4.830
20	19 36 50.90	2.0565	17 53 31.3	3.067	20	20 25 47.65	2.0222	16 17 29.8	4.903
21	19 38 54.25	2.0551	17 50 24.9	3.147	21	20 27 48.94	2.0208	16 12 33.5	4.975
22	19 40 57.51	2.0537	17 47 13.6	3.227	22	20 29 50.14	2.0194	16 7 32.8	5.047
23	19 43 0.69	2.0523	17 43 57.6	3.306	23	20 31 51.26	2.0179	16 2 27.8	5.119
24	19 45 3.78	2.0509	S.17 40 36.8	3.386	24	20 33 52.29	2.0165	S.15 57 18.5	5.190

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	4	2	27.3
○ Full Moon, ...	11	13	9.7
☾ Last Quarter, ...	18	5	5.9
● New Moon, ...	25	17	10.9

	d	h
☾ Apogee, ...	2	1.8
☾ Perigee, ...	13	20.9
☾ Apogee, ...	29	20.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh	P. L. of Diff.
1	Sun	W.	56° 27′ 25″	3455	57° 48′ 39″	3460	59° 9′ 48″	3463	60° 30′ 53″	3466
	Jupiter	E.	53 7 11	3073	51 38 28	3078	50 9 51	3082	48 41 19	3086
	Fomalhaut	E.	61 34 35	3496	60 14 6	3513	58 53 56	3531	57 34 6	3550
	α Pegasi	E.	75 54 27	3351	74 31 14	3359	73 8 11	3367	71 45 17	3376
	α Arietis	E.	119 18 30	3228	117 52 54	3228	116 27 18	3227	115 1 41	3226
2	Sun	W.	67 15 35	3476	68 36 26	3477	69 57 16	3477	71 18 6	3477
	Jupiter	E.	41 19 38	3098	39 51 26	3100	38 23 16	3101	36 55 7	3101
	Fomalhaut	E.	51 0 28	3661	49 42 59	3688	48 25 59	3716	47 9 29	3747
	α Pegasi	E.	64 53 17	3421	63 31 24	3430	62 9 41	3440	60 48 10	3451
	α Arietis	E.	107 53 23	3221	106 27 39	3220	105 1 54	3219	103 36 7	3218
3	Sun	W.	78 2 34	3466	79 23 36	3463	80 44 41	3459	82 5 51	3456
	Jupiter	E.	29 34 24	3099	28 6 14	3098	26 38 2	3096	25 9 49	3095
	Fomalhaut	E.	40 56 7	3951	39 43 39	4006	38 32 4	4065	37 21 28	4131
	α Pegasi	E.	54 3 42	3511	52 43 30	3526	51 23 35	3542	50 3 57	3560
	α Arietis	E.	96 26 28	3203	95 0 22	3198	93 34 11	3194	92 7 55	3190
	Aldebaran	E.	129 26 16	3069	127 57 28	3066	126 28 37	3063	124 59 42	3060
4	Sun	W.	88 53 6	3424	90 14 55	3416	91 36 53	3408	92 59 0	3400
	Fomalhaut	E.	31 47 4	4618	30 44 55	4762	29 44 47	4926	28 46 53	5115
	α Pegasi	E.	43 31 6	3674	42 13 51	3706	40 57 9	3740	39 41 4	3779
	α Arietis	E.	84 55 9	3163	83 28 16	3157	82 1 15	3150	80 34 6	3144
	Aldebaran	E.	117 33 35	3030	116 4 0	3023	114 34 16	3015	113 4 22	3008
5	Sun	W.	99 52 11	3350	101 15 25	3338	102 38 53	3326	104 2 34	3313
	α Aquilæ	W.	34 58 11	4774	35 58 9	4623	37 0 14	4497	38 4 9	4377
	α Pegasi	E.	33 32 49	4076	32 22 23	4163	31 13 21	4264	30 5 55	4381
	α Arietis	E.	73 16 14	3105	71 48 11	3097	70 19 58	3089	68 51 35	3081
	Aldebaran	E.	105 32 13	2961	104 1 11	2950	102 29 55	2939	100 58 25	2927
6	Sun	W.	111 4 46	3246	112 30 1	3231	113 55 33	3216	115 21 23	3201
	α Aquilæ	W.	43 48 0	3924	45 0 55	3856	46 15 0	3791	47 30 12	3738
	α Arietis	E.	61 27 4	3038	59 57 38	3030	58 28 2	3022	56 58 16	3014
	Aldebaran	E.	93 17 4	2863	91 43 58	2849	90 10 34	2835	88 36 51	2821
7	Sun	W.	122 35 13	3120	124 2 58	3104	125 31 3	3087	126 59 28	3070
	α Aquilæ	W.	54 1 21	3471	55 22 17	3427	56 44 3	3386	58 6 36	3346
	Jupiter	W.	19 13 43	2792	20 48 22	2772	22 23 25	2753	23 58 54	2735
	α Arietis	E.	49 27 12	2982	47 56 37	2979	46 25 58	2977	44 55 16	2975
	Aldebaran	E.	80 43 28	2744	79 7 46	2728	77 31 43	2711	75 55 18	2696
	Pollux	E.	123 57 59	2852	122 24 39	2831	120 50 52	2811	119 16 39	2792
8	α Aquilæ	W.	65 10 9	3173	66 36 51	3141	68 4 11	3111	69 32 7	3083
	Fomalhaut	W.	33 39 58	3871	34 53 47	3763	36 9 38	3648	37 27 21	3526
	Jupiter	W.	32 2 30	2642	33 40 28	2624	35 18 51	2606	36 57 38	2588
	α Pegasi	W.	22 32 59	5928	23 18 57	5461	24 10 8	5077	25 6 3	4786
	α Arietis	E.	37 22 12	3003	35 52 3	3018	34 22 12	3039	32 52 47	3065
	Aldebaran	E.	67 47 41	2611	66 9 1	2594	64 29 58	2577	62 50 31	2560
	Pollux	E.	111 19 14	2696	109 42 29	2678	108 5 20	2660	106 27 46	2642
9	α Aquilæ	W.	77 0 4	2957	78 31 11	2934	80 2 47	2913	81 34 49	2892
	Jupiter	W.	45 17 43	2500	46 58 56	2483	48 40 33	2467	50 22 33	2450
	Fomalhaut	W.	44 19 37	3184	45 46 5	3129	47 13 40	3076	48 42 19	3026
	α Pegasi	W.	30 42 24	3731	31 58 38	3599	33 17 13	3483	34 37 56	3379

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	61° 51′ 55″	3470	63° 12′ 53″	3471	64° 33′ 49″	3473	65° 54′ 43″	3475
	Jupiter	E.	47 12 51	3089	45 44 28	3091	44 16 8	3094	42 47 52	3096
	Fomalhaut	E.	56 14 37	3570	54 55 30	3590	53 36 45	3612	52 18 24	3635
	α Pegasi	E.	70 22 33	3386	68 59 59	3393	67 37 35	3402	66 15 21	3411
	α Arietis	E.	113 36 3	3226	112 10 24	3226	110 44 45	3225	109 19 5	3223
2	Sun	W.	72 38 56	3476	73 59 47	3473	75 20 41	3472	76 41 36	3470
	Jupiter	E.	35 26 59	3101	33 58 51	3101	32 30 43	3101	31 2 34	3101
	Fomalhaut	E.	45 53 32	3781	44 38 10	3818	43 23 26	3858	42 9 24	3903
	α Pegasi	E.	59 26 51	3463	58 5 44	3473	56 44 50	3485	55 24 9	3497
	α Arietis	E.	102 10 17	3214	100 44 24	3212	99 18 29	3209	97 52 30	3206
3	Sun	W.	83 27 5	3449	84 48 26	3445	86 9 52	3438	87 31 25	3431
	Jupiter	E.	23 41 34	3094	22 13 17	3093	20 44 59	3091	19 16 38	3089
	Fomalhaut	E.	36 11 56	4206	35 3 36	4291	33 56 35	4386	32 51 1	4494
	α Pegasi	E.	48 44 37	3577	47 25 38	3598	46 7 2	3622	44 48 51	3646
	α Arietis	E.	90 41 34	3185	89 15 7	3180	87 48 34	3175	86 21 55	3169
	Aldebaran	E.	123 30 41	3054	122 1 35	3048	120 32 22	3042	119 3 2	3037
4	Sun	W.	94 21 16	3391	95 43 43	3382	97 6 20	3372	98 29 9	3360
	Fomalhaut	E.	27 51 27	5339	26 58 48	5600	26 9 12	5908	25 22 58	6269
	α Pegasi	E.	38 25 40	3823	37 11 2	3876	35 57 17	3932	34 44 30	3999
	α Arietis	E.	79 6 50	3137	77 39 25	3129	76 11 51	3121	74 44 7	3114
	Aldebaran	E.	111 34 19	2999	110 4 5	2990	108 33 40	2981	107 3 3	2970
5	Sun	W.	105 26 30	3301	106 50 40	3288	108 15 6	3274	109 39 48	3260
	α Aquilæ	W.	39 9 51	4270	40 17 11	4173	41 26 3	4083	42 36 21	4001
	α Pegasi	E.	29 0 17	4519	27 56 42	4684	26 55 29	4879	25 56 57	5107
	α Arietis	E.	67 23 2	3072	65 54 18	3064	64 25 24	3056	62 56 19	3047
	Aldebaran	E.	99 26 40	2915	97 54 40	2903	96 22 25	2890	94 49 53	2876
6	Sun	W.	116 47 31	3185	118 13 58	3170	119 40 43	3153	121 7 48	3137
	α Aquilæ	W.	48 46 29	3670	50 3 48	3616	51 22 5	3565	52 41 17	3518
	α Arietis	E.	55 28 20	3006	53 58 15	3000	52 28 2	2993	50 57 41	2987
	Aldebaran	E.	87 2 50	2805	85 28 29	2791	83 53 49	2775	82 18 49	2760
7	Sun	W.	128 28 14	3053	129 57 21	3036	131 26 49	3020	132 56 37	3002
	α Aquilæ	W.	59 29 54	3306	60 53 56	3272	62 18 40	3237	63 44 5	3204
	Jupiter	W.	25 34 47	2716	27 11 6	2696	28 47 49	2679	30 24 57	2660
	α Arietis	E.	43 24 32	2976	41 53 49	2978	40 23 9	2983	38 52 35	2992
	Aldebaran	E.	74 18 32	2678	72 41 23	2662	71 3 52	2646	69 25 58	2628
	Pollux	E.	117 42 1	2772	116 6 57	2753	114 31 28	2735	112 55 34	2716
8	α Aquilæ	W.	71 0 37	3056	72 29 41	3029	73 59 18	3004	75 29 26	2980
	Fomalhaut	W.	38 46 48	3465	40 7 51	3388	41 30 25	3313	42 54 22	3246
	Jupiter	W.	38 36 51	2569	40 16 27	2552	41 56 28	2535	43 36 53	2518
	α Pegasi	W.	26 6 16	4484	27 10 22	4263	28 17 58	4063	29 28 45	3881
	α Arietis	E.	31 23 54	3098	29 55 42	3143	28 28 24	3197	27 2 11	3260
	Aldebaran	E.	61 10 41	2543	59 30 27	2526	57 49 50	2509	56 8 49	2492
	Pollux	E.	104 49 46	2622	103 11 21	2604	101 32 32	2586	99 53 18	2568
9	α Aquilæ	W.	83 7 18	2873	84 40 12	2856	86 13 29	2838	87 47 8	2821
	Jupiter	W.	52 4 57	2433	53 47 45	2417	55 30 55	2402	57 14 27	2387
	Fomalhaut	W.	50 11 59	2981	51 42 36	2939	53 14 6	2899	54 46 26	2861
	α Pegasi	W.	36 0 36	3288	37 25 2	3205	38 51 5	3130	40 18 38	3064

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran	E.	54° 27′ 24″	2475	52° 45′ 36″	2456	51° 3′ 24″	2442	49° 20′ 49″	2426
	Pollux	E.	98 13 39	2551	96 33 36	2534	94 53 10	2517	93 12 21	2500
10	a Aquilæ	W.	89 21 9	2806	90 55 29	2792	92 30 8	2779	94 5 4	2767
	Jupiter	W.	58 58 21	2371	60 42 38	2356	62 27 16	2342	64 12 14	2328
	Fomalhaut	W.	56 19 35	2826	57 53 29	2794	59 28 5	2763	61 3 21	2734
	a Pegasi	W.	41 47 32	3002	43 17 42	2946	44 49 2	2895	46 21 27	2848
	Aldebaran	E.	40 42 16	2348	38 57 26	2334	37 12 16	2320	35 26 45	2305
	Pollux	E.	84 42 35	2424	82 59 34	2409	81 16 12	2395	79 32 30	2382
	Regulus	E.	120 48 16	2350	119 3 30	2336	117 18 23	2322	115 32 55	2307
11	a Aquilæ	W.	102 3 4	2726	103 39 9	2722	105 15 19	2720	106 51 32	2719
	Jupiter	W.	73 2 3	2264	74 48 56	2252	76 36 6	2241	78 23 32	2231
	Fomalhaut	W.	69 8 36	2614	70 47 12	2595	72 26 14	2577	74 5 41	2559
	a Pegasi	W.	54 17 15	2664	55 54 43	2635	57 32 50	2609	59 11 33	2583
	Aldebaran	E.	26 34 14	2241	24 46 48	2231	22 59 6	2220	21 11 8	2210
	Pollux	E.	70 49 37	2326	69 4 15	2316	67 18 38	2307	65 32 49	2300
	Regulus	E.	106 40 36	2243	104 53 13	2232	103 5 33	2221	101 17 37	2210
12	a Aquilæ	W.	114 52 1	2745	116 27 41	2756	118 3 6	2771	119 38 12	2788
	Jupiter	W.	87 24 18	2187	89 13 5	2180	91 2 3	2174	92 51 10	2168
	Fomalhaut	W.	82 28 12	2494	84 9 33	2486	85 51 7	2477	87 32 53	2470
	a Pegasi	W.	67 32 52	2467	69 14 24	2472	70 56 17	2458	72 38 29	2445
	a Arietis	W.	24 47 33	2988	26 18 1	2883	27 50 42	2793	29 25 19	2717
	Pollux	E.	56 41 18	2274	54 54 40	2271	53 7 58	2270	51 21 15	2270
	Regulus	E.	92 14 15	2167	90 24 57	2159	88 35 27	2152	86 45 47	2147
13	Jupiter	W.	101 58 44	2147	103 48 32	2145	105 38 23	2143	107 28 17	2141
	Fomalhaut	W.	96 3 35	2454	97 45 53	2453	99 28 12	2455	101 10 29	2456
	a Pegasi	W.	81 13 9	2406	82 56 37	2401	84 40 11	2397	86 23 50	2394
	a Arietis	W.	37 39 3	2480	39 20 44	2451	41 3 6	2426	42 46 3	2404
	Pollux	E.	42 28 26	2296	40 42 19	2306	38 56 28	2319	37 10 56	2336
	Regulus	E.	77 35 34	2126	75 45 14	2122	73 54 49	2120	72 4 21	2120
14	Fomalhaut	W.	109 40 11	2493	111 21 34	2504	113 2 41	2517	114 43 30	2533
	a Pegasi	W.	95 2 27	2399	96 46 3	2403	98 29 33	2408	100 12 56	2415
	a Arietis	W.	51 27 25	2333	53 12 36	2326	54 57 58	2320	56 43 29	2314
	Aldebaran	W.	17 16 13	2121	19 6 40	2122	20 57 5	2124	22 47 27	2128
	Pollux	E.	28 31 4	2485	26 49 30	2536	25 9 7	2600	23 30 12	2678
	Regulus	E.	62 51 54	2122	61 1 28	2124	59 11 5	2126	57 20 46	2129
	Spica	E.	116 23 32	2145	114 33 42	2146	112 43 53	2147	110 54 5	2148
15	a Pegasi	W.	108 47 2	2464	110 29 6	2477	112 10 51	2492	113 52 16	2507
	a Arietis	W.	65 32 20	2307	67 18 9	2309	69 3 56	2311	70 49 39	2314
	Aldebaran	W.	31 57 51	2149	33 47 35	2155	35 37 10	2161	37 26 36	2167
	Regulus	E.	48 10 37	2153	46 20 58	2158	44 31 27	2165	42 42 6	2171
	Spica	E.	101 46 10	2168	99 56 54	2174	98 7 47	2180	96 18 50	2186
	Sun	E.	132 30 37	2485	130 49 2	2491	129 7 36	2497	127 26 18	2503
16	a Pegasi	W.	122 13 9	2610	123 51 50	2637	125 29 55	2665	127 7 22	2696
	a Arietis	W.	79 36 45	2341	81 21 45	2348	83 6 35	2355	84 51 14	2364
	Aldebaran	W.	46 31 10	2205	48 19 30	2214	50 7 37	2223	51 55 31	2231
	Regulus	E.	33 38 5	2211	31 49 54	2220	30 1 56	2229	28 14 12	2239
	Spica	E.	87 16 37	2224	85 28 45	2233	83 41 6	2241	81 53 39	2250
	Sun	E.	119 2 7	2540	117 21 49	2548	115 41 43	2557	114 1 49	2566

GREENWICH MEAN TIME

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Aldebaran	E.	47° 37′ 52″	2410	45° 54′ 32″	2394	44° 10′ 49″	2379	42° 26′ 44″	2363
	Pollux	E.	91 31 8	2486	89 49 33	2469	88 7 36	2453	86 25 16	2438
10	α Aquilæ	W.	95 40 15	2756	97 15 40	2747	98 51 18	2739	100 27 6	2732
	Jupiter	W.	65 57 33	2314	67 43 12	2301	69 29 11	2288	71 15 28	2276
	Fomalhaut	W.	62 39 16	2707	64 15 47	2681	65 52 52	2657	67 30 29	2635
	α Pegasi	W.	47 54 53	2805	49 29 15	2766	51 4 28	2729	52 40 29	2695
	Aldebaran	E.	33 40 53	2292	31 54 42	2279	30 8 11	2266	28 21 22	2253
	Pollux	E.	77 48 30	2370	76 4 12	2357	74 19 36	2346	72 34 44	2336
	Regulus	E.	113 47 6	2294	112 0 57	2281	110 14 29	2268	108 27 42	2255
11	α Aquilæ	W.	108 27 46	2720	110 3 59	2724	111 40 7	2729	113 16 9	2736
	Jupiter	W.	80 11 13	2221	81 59 9	2212	83 47 20	2203	85 35 43	2195
	Fomalhaut	W.	75 45 32	2544	77 25 44	2530	79 6 16	2517	80 47 6	2505
	α Pegasi	W.	60 50 51	2561	62 30 40	2540	64 10 58	2520	65 51 43	2503
	Aldebaran	E.	19 22 55	2200	17 34 28	2191	15 45 47	2182	13 56 53	2174
	Pollux	E.	63 46 49	2293	62 0 39	2286	60 14 19	2281	58 27 51	2277
	Regulus	E.	99 29 24	2200	97 40 57	2191	95 52 16	2182	94 3 22	2174
12	α Aquilæ	W.	121 12 56	2806	122 47 14	2831	124 21 1	2859	125 54 12	2891
	Jupiter	W.	94 40 27	2162	96 29 51	2157	98 19 23	2154	100 9 0	2150
	Fomalhaut	W.	89 14 49	2464	90 56 53	2460	92 39 3	2456	94 21 18	2455
	α Pegasi	W.	74 20 59	2435	76 3 44	2426	77 46 41	2418	79 29 50	2411
	α Arietis	W.	31 1 36	2653	32 39 19	2601	34 18 13	2555	35 58 10	2515
	Pollux	E.	49 34 32	2272	47 47 51	2275	46 1 15	2280	44 14 46	2286
	Regulus	E.	84 56 0	2141	83 6 4	2136	81 16 0	2132	79 25 50	2128
13	Jupiter	W.	109 18 12	2141	111 8 9	2141	112 58 5	2141	114 48 1	2143
	Fomalhaut	W.	102 52 41	2462	104 34 47	2467	106 16 46	2475	107 58 35	2484
	α Pegasi	W.	88 7 33	2398	89 51 18	2393	91 35 3	2394	93 18 47	2396
	α Arietis	W.	44 29 32	2384	46 13 29	2368	47 57 49	2355	49 42 28	2343
	Pollux	E.	35 25 47	2355	33 41 7	2378	31 57 0	2407	30 13 35	2445
	Regulus	E.	70 13 52	2119	68 23 22	2119	66 32 52	2119	64 42 22	2120
14	Fomalhaut	W.	116 23 57	2550	118 4 1	2567	119 43 41	2588	121 22 52	2611
	α Pegasi	W.	101 56 10	2422	103 39 13	2431	105 22 4	2441	107 4 41	2452
	α Arietis	W.	58 29 8	2311	60 14 52	2308	62 0 40	2307	63 46 30	2307
	Aldebaran	W.	24 37 44	2131	26 27 56	2136	28 18 1	2139	30 8 0	2145
	Pollux	E.	21 53 3	2779	20 18 7	2906	18 45 55	3071	17 17 10	3292
	Regulus	E.	55 30 31	2133	53 40 23	2137	51 50 20	2141	50 0 24	2147
	Spica	E.	109 4 19	2151	107 14 38	2155	105 25 3	2159	103 35 33	2163
15	α Pegasi	W.	115 33 19	2525	117 13 58	2543	118 54 11	2564	120 33 55	2586
	α Arietis	W.	72 35 18	2318	74 20 51	2323	76 6 17	2328	77 51 35	2334
	Aldebaran	W.	39 15 53	2174	41 4 59	2182	42 53 54	2189	44 42 38	2197
	Regulus	E.	40 52 55	2178	39 3 55	2186	37 15 6	2194	35 26 29	2202
	Spica	E.	94 30 2	2193	92 41 24	2200	90 52 57	2208	89 4 41	2216
	Sun	E.	125 45 8	2510	124 4 8	2516	122 23 17	2524	120 42 37	2531
16	α Pegasi	W.	128 44 8	2729	130 20 10	2765	131 55 24	2804	133 29 47	2845
	α Arietis	W.	86 35 41	2373	88 19 55	2381	90 3 57	2391	91 47 45	2401
	Aldebaran	W.	53 43 13	2240	55 30 41	2249	57 17 55	2259	59 4 55	2269
	Regulus	E.	26 26 42	2250	24 39 29	2260	22 52 31	2271	21 5 49	2283
	Spica	E.	80 6 26	2260	78 19 27	2269	76 32 42	2279	74 46 12	2289
	Sun	E.	112 22 8	2576	110 42 40	2585	109 3 25	2596	107 24 24	2605

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	a Arietis	W.	93° 31′ 18″	2412	95° 14′ 36″	2422	96° 57′ 39″	2433	98° 40′ 27″	2445
	Aldebaran	W.	60 51 40	2279	62 38 11	2289	64 24 27	2298	66 10 29	2308
	Pollux	W.	19 51 9	2957	21 22 16	2871	22 55 12	2803	24 29 37	2746
	Spica	E.	72 59 56	2299	71 13 55	2310	69 28 10	2320	67 42 40	2331
	Sun	E.	105 45 36	2616	104 7 3	2626	102 28 44	2637	100 50 39	2648
18	a Arietis	W.	107 10 11	2507	108 51 14	2521	110 31 58	2535	112 12 23	2549
	Aldebaran	W.	74 56 53	2361	76 41 24	2371	78 25 40	2382	80 9 41	2393
	Pollux	W.	32 35 8	2613	34 13 45	2603	35 52 36	2595	37 31 38	2589
	Spica	E.	58 59 8	2387	57 15 14	2398	55 31 37	2410	53 48 17	2422
	Sun	E.	92 43 59	2704	91 7 24	2716	89 31 5	2727	87 55 1	2738
19	a Arietis	W.	120 29 19	2627	122 7 37	2646	123 45 30	2663	125 22 59	2683
	Aldebaran	W.	88 46 0	2445	90 28 31	2455	92 10 47	2465	93 52 49	2476
	Pollux	W.	45 47 55	2586	47 27 9	2589	49 6 19	2593	50 45 24	2607
	Spica	E.	45 15 51	2483	43 34 14	2497	41 52 56	2510	40 11 56	2523
	Sun	E.	79 58 27	2796	78 23 54	2807	76 49 35	2818	75 15 31	2830
20	Aldebaran	W.	102 19 22	2527	103 59 58	2536	105 40 21	2546	107 20 30	2556
	Pollux	W.	58 59 9	2626	60 37 29	2632	62 15 41	2639	63 53 43	2646
	Regulus	W.	22 15 35	2537	23 55 57	2546	25 36 6	2555	27 16 3	2564
	Spica	E.	31 51 49	2598	30 12 51	2615	28 34 17	2635	26 56 9	2656
	Sun	E.	67 28 53	2887	65 56 17	2898	64 23 56	2909	62 51 49	2920
21	Aldebaran	W.	115 37 57	2604	117 16 47	2613	118 55 25	2622	120 33 50	2631
	Pollux	W.	72 1 24	2684	73 38 25	2692	75 15 16	2700	76 51 56	2707
	Regulus	W.	35 32 46	2608	37 11 30	2617	38 50 2	2626	40 28 22	2635
	Sun	E.	55 14 45	2976	53 44 2	2987	52 13 33	2998	50 43 18	3009
22	Pollux	W.	84 52 33	2750	86 28 7	2757	88 3 31	2766	89 38 43	2775
	Regulus	W.	48 37 0	2678	50 14 9	2687	51 51 6	2695	53 27 52	2704
	Sun	E.	43 15 30	3065	41 46 38	3078	40 18 1	3089	38 49 38	3101
23	Pollux	W.	97 31 54	2818	99 5 58	2828	100 39 50	2837	102 13 30	2846
	Regulus	W.	61 28 51	2746	63 4 30	2754	64 39 58	2763	66 15 15	2771
	Sun	E.	31 31 33	3168	30 4 45	3182	28 38 14	3198	27 12 2	3214
28	Sun	W.	25 48 39	3504	27 8 59	3503	28 29 20	3502	29 49 42	3502
	Jupiter	E.	58 41 9	3078	57 12 33	3083	55 44 3	3088	54 15 39	3093
	Fomalhaut	E.	64 51 10	3436	63 29 34	3452	62 8 16	3468	60 47 16	3485
	a Pegasi	E.	79 24 51	3326	78 1 10	3334	76 37 38	3343	75 14 16	3351
	a Arietis	E.	122 53 31	3222	121 27 48	3220	120 2 3	3220	118 36 17	3220
29	Sun	W.	36 31 34	3503	37 51 55	3504	39 12 15	3505	40 32 34	3505
	Jupiter	E.	46 55 4	3114	45 27 12	3117	43 59 23	3120	42 31 39	3124
	Fomalhaut	E.	54 7 19	3585	52 48 28	3608	51 30 2	3634	50 12 4	3660
	a Pegasi	E.	68 20 2	3399	66 57 44	3409	65 35 38	3421	64 13 45	3431
	a Arietis	E.	111 27 29	3220	110 1 43	3220	108 35 58	3220	107 10 13	3220
30	Sun	W.	47 14 5	3505	48 34 24	3505	49 54 43	3503	51 15 4	3502
	Jupiter	E.	35 13 42	3133	33 46 13	3134	32 18 46	3135	30 51 19	3137
	Fomalhaut	E.	43 50 10	3830	42 35 39	3875	41 21 54	3923	40 8 58	3976
	a Pegasi	E.	57 27 40	3497	56 7 12	3511	54 47 0	3527	53 27 6	3545
	a Arietis	E.	100 1 28	3220	98 35 42	3220	97 9 56	3219	95 44 9	3218
	Aldebaran	E.	133 4 25	3084	131 35 56	3083	130 7 26	3083	128 38 56	3082

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	*a* Arietis	W.	100° 22′ 58″	2457	102° 5′ 12″	2468	103° 47′ 10″	2481	105° 28′ 50″	2494
	Aldebaran	W.	67 56 16	2319	69 41 48	2329	71 27 5	2339	73 12 7	2350
	Pollux	W.	26 5 13	2706	27 41 45	2673	29 19 1	2648	30 56 51	2628
	Spica	E.	65 57 26	2342	64 12 28	2353	62 27 45	2364	60 43 18	2376
	Sun	E.	99 12 49	2659	97 35 14	2670	95 57 54	2681	94 20 49	2692
18	*a* Arietis	W.	113 52 28	2564	115 32 13	2580	117 11 36	2595	118 50 38	2610
	Aldebaran	W.	81 53 27	2403	83 36 58	2414	85 20 13	2424	87 3 14	2434
	Pollux	W.	39 10 48	2585	40 50 3	2584	42 29 20	2583	44 8 38	2584
	Spica	E.	52 5 13	2433	50 22 26	2446	48 39 57	2458	46 57 45	2471
	Sun	E.	86 19 12	2750	84 43 38	2761	83 8 19	2773	81 33 16	2784
19	*a* Arietis	W.	127 0 2	2702	128 36 39	2723	130 12 48	2744	131 48 29	2766
	Aldebaran	W.	95 34 36	2486	97 16 9	2497	98 57 27	2506	100 38 32	2517
	Pollux	W.	52 24 23	2601	54 3 16	2607	55 42 2	2612	57 20 40	2619
	Spica	E.	38 31 15	2537	36 50 53	2551	35 10 51	2566	33 31 9	2582
	Sun	E.	73 41 42	2842	72 8 8	2852	70 34 48	2864	69 1 43	2876
20	Aldebaran	W.	109 0 26	2566	110 40 8	2575	112 19 38	2585	113 58 54	2594
	Pollux	W.	65 31 35	2654	67 9 17	2660	68 46 50	2668	70 24 13	2677
	Regulus	W.	28 55 48	2573	30 35 20	2581	32 14 41	2590	33 53 50	2599
	Spica	E.	25 18 28	2676	23 41 16	2703	22 4 40	2735	20 28 46	2766
	Sun	E.	61 19 56	2932	59 48 18	2942	58 16 53	2954	56 45 42	2965
21	Aldebaran	W.	122 12 3	2640	123 50 3	2649	125 27 51	2658	127 5 27	2667
	Pollux	W.	78 28 26	2716	80 4 45	2725	81 40 52	2733	83 16 48	2741
	Regulus	W.	42 6 30	2643	43 44 26	2653	45 22 9	2662	46 59 40	2670
	Sun	E.	49 13 16	3021	47 43 29	3033	46 13 55	3043	44 44 35	3055
22	Pollux	W.	91 13 44	2783	92 48 34	2792	94 23 12	2801	95 57 39	2810
	Regulus	W.	55 4 26	2713	56 40 49	2721	58 17 1	2729	59 53 2	2738
	Sun	E.	37 21 30	3114	35 53 37	3127	34 26 0	3138	32 58 38	3153
23	Pollux	W.	103 46 58	2856	105 20 14	2864	106 53 19	2873	108 26 12	2883
	Regulus	W.	67 50 21	2779	69 25 16	2787	71 0 1	2796	72 34 35	2803
	Sun	E.	25 46 10	3233	24 20 40	3253	22 55 33	3276	21 30 53	3300
28	Sun	W.	31 10 4	3501	32 30 27	3501	33 50 50	3502	35 11 12	3502
	Jupiter	E.	52 47 22	3098	51 19 10	3102	49 51 3	3106	48 23 1	3110
	Fomalhaut	E.	59 26 35	3503	58 6 14	3521	56 46 13	3541	55 26 34	3563
	a Pegasi	E.	73 51 4	3360	72 28 2	3370	71 5 11	3379	69 42 31	3389
	a Arietis	E.	117 10 32	3220	115 44 47	3220	114 19 1	3220	112 53 15	3220
29	Sun	W.	41 52 53	3506	43 13 11	3506	44 33 29	3506	45 53 47	3506
	Jupiter	E.	41 3 58	3126	39 36 20	3129	38 8 45	3130	36 41 12	3133
	Fomalhaut	E.	48 54 34	3689	47 37 35	3722	46 21 11	3756	45 5 22	3791
	a Pegasi	E.	62 52 4	3443	61 30 36	3456	60 9 23	3469	58 48 24	3482
	a Arietis	E.	105 44 28	3220	104 18 43	3221	102 52 59	3220	101 27 14	3220
30	Sun	W.	52 35 26	3500	53 55 50	3498	55 16 16	3496	56 36 45	3493
	Jupiter	E.	29 23 54	3137	27 56 29	3137	26 29 4	3137	25 1 39	3137
	Fomalhaut	E.	38 56 54	4034	37 45 48	4101	36 35 47	4178	35 26 55	4249
	a Pegasi	E.	52 7 31	3563	50 48 16	3583	49 29 23	3604	48 10 53	3626
	a Arietis	E.	94 18 20	3216	92 52 30	3215	91 26 39	3214	90 0 46	3212
	Aldebaran	E.	127 10 25	3083	125 41 53	3082	124 13 21	3080	122 44 47	3078

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	16 28 35.08	10.794	S.21 47 28.9	23.52	16 15.95	70.28	10 52.81	0.937
Mon.	2	16 32 54.53	10.820	21 56 41.2	22.47	16 16.10	70.37	10 29.98	0.963
Tues.	3	16 37 14.58	10.845	22 5 28.1	21.41	16 16.25	70.45	10 6.55	0.988
Wed.	4	16 41 35.20	10.869	22 13 49.2	20.33	16 16.39	70.53	9 42.55	1.012
Thur.	5	16 45 56.39	10.892	22 21 44.3	19.24	16 16.53	70.61	9 17.98	1.035
Fri.	6	16 50 18.13	10.914	22 29 13.4	18.15	16 16.67	70.68	8 52.88	1.057
Sat.	7	16 54 40.38	10.935	22 36 16.2	17.05	16 16.80	70.75	8 27.25	1.078
Sun.	8	16 59 3.12	10.954	22 42 52.5	15.94	16 16.93	70.82	8 1.14	1.097
Mon.	9	17 3 26.30	10.973	22 49 1.9	14.82	16 17.05	70.88	7 34.58	1.116
Tues.	10	17 7 49.92	10.990	22 54 44.2	13.69	16 17.17	70.94	7 7.59	1.133
Wed.	11	17 12 13.96	11.007	22 59 59.2	12.55	16 17.28	70.99	6 40.19	1.150
Thur.	12	17 16 38.39	11.022	23 4 46.9	11.41	16 17.38	71.04	6 12.39	1.165
Fri.	13	17 21 3.18	11.037	23 9 7.1	10.26	16 17.48	71.09	5 44.23	1.180
Sat.	14	17 25 28.30	11.050	23 12 59.7	9.11	16 17.57	71.13	5 15.74	1.193
Sun.	15	17 29 53.73	11.062	23 16 24.7	7.95	16 17.65	71.17	4 46.96	1.205
Mon.	16	17 34 19.44	11.073	23 19 21.7	6.79	16 17.73	71.20	4 17.89	1.216
Tues.	17	17 38 45.40	11.082	23 21 50.7	5.62	16 17.80	71.23	3 48.57	1.226
Wed.	18	17 43 11.58	11.090	23 23 51.5	4.45	16 17.87	71.25	3 19.03	1.234
Thur.	19	17 47 37.92	11.097	23 25 24.2	3.28	16 17.93	71.27	2 49.32	1.241
Fri.	20	17 52 4.40	11.102	23 26 28.7	2.10	16 17.99	71.28	2 19.48	1.246
Sat.	21	17 56 31.00	11.106	23 27 5.0	0.92	16 18.05	71.29	1 49.52	1.250
Sun.	22	18 0 57.69	11.108	23 27 12.9	0.26	16 18.10	71.30	1 19.46	1.252
Mon.	23	18 5 24.42	11.108	23 26 52.4	1.44	16 18.15	71.30	0 49.38	1.253
Tues.	24	18 9 51.13	11.108	23 26 3.7	2.61	16 18.19	71.29	0 19.31	1.252
Wed.	25	18 14 17.80	11.106	23 24 46.8	3.79	16 18.23	71.28	0 10.73	1.249
Thur.	26	18 18 44.40	11.102	23 23 1.8	4.96	16 18.26	71.27	0 40.69	1.245
Fri.	27	18 23 10.89	11.096	23 20 48.5	6.14	16 18.29	71.25	1 10.54	1.239
Sat.	28	18 27 37.22	11.089	23 18 7.0	7.31	16 18.32	71.23	1 40.23	1.232
Sun.	29	18 32 3.35	11.080	23 14 57.4	8.48	16 18.34	71.21	2 9.72	1.223
Mon.	30	18 36 29.24	11.070	23 11 19.8	9.64	16 18.36	71.18	2 38.96	1.213
Tues.	31	18 40 54.86	11.058	23 7 14.2	10.80	16 18.38	71.15	3 7.95	1.201
Wed.	32	18 45 20.19	11.045	S.23 2 41.0	11.95	16 18.39	71.11	3 36.65	1.188

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to* / *subtracted from* *Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	16 28 37.04	10.794	S.21 47 33.2	23.52	10 52.64	0.937	16 39 29.68
Mon.	2	16 32 56.42	10.820	21 56 45.2	22.47	10 29.81	0.963	16 43 26.23
Tues.	3	16 37 16.40	10.845	22 5 31.7	21.41	10 6.39	0.988	16 47 22.79
Wed.	4	16 41 36.96	10.869	22 13 52.5	20.33	9 42.39	1.012	16 51 19.35
Thur.	5	16 45 58.08	10.892	22 21 47.3	19.24	9 17.82	1.035	16 55 15.90
Fri.	6	16 50 19.74	10.914	22 29 16.1	18.15	8 52.72	1.057	16 59 12.46
Sat.	7	16 54 41.92	10.935	22 36 18.6	17.05	8 27.10	1.078	17 3 9.02
Sun.	8	16 59 4.58	10.954	22 42 54.6	15.94	8 0.99	1.097	17 7 5.57
Mon.	9	17 3 27.68	10.973	22 49 3.7	14.82	7 34.45	1.116	17 11 2.13
Tues.	10	17 7 51.22	10.990	22 54 45.7	13.69	7 7.47	1.133	17 14 58.69
Wed.	11	17 12 15.18	11.007	23 0 0.6	12.55	6 40.06	1.150	17 18 55.24
Thur.	12	17 16 39.53	11.022	23 4 48.1	11.41	6 12.27	1.165	17 22 51.80
Fri.	13	17 21 4.24	11.037	23 9 8.1	10.26	5 44.12	1.180	17 26 48.36
Sat.	14	17 25 29.27	11.050	23 13 0.5	9.11	5 15.64	1.193	17 30 44.91
Sun.	15	17 29 54.61	11.062	23 16 25.3	7.95	4 46.86	1.205	17 34 41.47
Mon.	16	17 34 20.23	11.073	23 19 22.2	6.79	4 17.80	1.216	17 38 38.03
Tues.	17	17 38 46.10	11.082	23 21 51.0	5.62	3 48.49	1.226	17 42 34.59
Wed.	18	17 43 12.19	11.090	23 23 51.7	4.45	3 18.95	1.234	17 46 31.14
Thur.	19	17 47 38.44	11.097	23 25 24.2	3.28	2 49.26	1.241	17 50 27.70
Fri.	20	17 52 4.83	11.102	23 26 28.7	2.10	2 19.43	1.246	17 54 24.26
Sat.	21	17 56 31.34	11.106	23 27 5.0	0.92	1 49.48	1.250	17 58 20.82
Sun.	22	18 0 57.94	11.108	23 27 12.9	0.26	1 19.43	1.252	18 2 17.37
Mon.	23	18 5 24.57	11.108	23 26 52.4	1.44	0 49.36	1.253	18 6 13.93
Tues.	24	18 9 51.19	11.108	23 26 3.7	2.61	0 19.30	1.252	18 10 10.49
Wed.	25	18 14 17.77	11.106	23 24 46.8	3.79	0 10.73	1.249	18 14 7.04
Thur.	26	18 18 44.28	11.102	23 23 1.8	4.96	0 40.68	1.249	18 18 3.60
Fri.	27	18 23 10.68	11.096	23 20 48.6	6.14	1 10.52	1.239	18 22 0.16
Sat.	28	18 27 36.91	11.089	23 18 7.2	7.31	1 40.20	1.232	18 25 56.71
Sun.	29	18 32 2.95	11.080	23 14 57.7	8.48	2 9.68	1.223	18 29 53.27
Mon.	30	18 36 28.75	11.070	23 11 20.2	9.64	2 38.92	1.213	18 33 49.83
Tues.	31	18 40 54.29	11.058	23 7 14.8	10.80	3 7.90	1.201	18 37 46.39
Wed.	32	18 45 19.53	11.045	S.23 2 41.7	11.95	3 36.59	1.188	18 41 42.94

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	335	248 52 28.4	51 49.3	152.18	+0.06	9.9937510	29.0	7 19 18.16
2	336	249 53 21.0	52 41.8	152.21	—0.06	.9936822	28.3	7 15 22.25
3	337	250 54 14.4	53 35.1	152.25	0.20	.9936151	27.6	7 11 26.34
4	338	251 55 8.7	54 29.2	152.28	0.34	.9935499	26.8	7 7 30.43
5	339	252 56 3.8	55 24.1	152.31	0.47	.9934867	25.9	7 3 34.51
6	340	253 56 59.6	56 19.7	152.34	0.58	.9934256	25.0	6 59 38.60
7	341	254 57 56.0	57 16.0	152.37	0.66	.9933668	24.0	6 55 42.69
8	342	255 58 53.1	58 13.0	152.40	0.74	.9933105	22.9	6 51 46.77
9	343	256 59 51.0	59 10.7	152.43	0.79	.9932568	21.8	6 47 50.87
10	344	258 0 49.6	0 9.1	152.46	0.80	.9932057	20.7	6 43 54.96
11	345	259 1 48.9	1 8.2	152.49	0.78	.9931573	19.6	6 39 59.05
12	346	260 2 49.1	2 8.3	152.53	0.74	.9931115	18.6	6 36 3.14
13	347	261 3 50.2	3 9.3	152.56	0.67	.9930683	17.5	6 32 7.23
14	348	262 4 52.2	4 11.1	152.60	0.57	.9930278	16.4	6 28 11.32
15	349	263 5 55.0	5 13.7	152.63	0.45	.9929899	15.3	6 24 15.41
16	350	264 6 58.7	6 17.2	152.67	0.32	.9929546	14.3	6 20 19.50
17	351	265 8 3.2	7 21.6	152.70	0.19	.9929218	13.3	6 16 23.58
18	352	266 9 8.5	8 26.8	152.74	—0.06	.9928914	12.3	6 12 27.67
19	353	267 10 14.7	9 32.8	152.78	+0.07	.9928631	11.4	6 8 31.75
20	354	268 11 21.7	10 39.6	152.81	0.18	.9928368	10.5	6 4 35.84
21	355	269 12 29.5	11 47.2	152.84	0.27	.9928126	9.7	6 0 39.94
22	356	270 13 38.0	12 55.5	152.86	0.33	.9927902	8.9	5 56 44.03
23	357	271 14 47.0	14 4.4	152.89	0.36	.9927696	8.2	5 52 48.12
24	358	272 15 56.6	15 13.8	152.91	0.36	.9927508	7.6	5 48 52.21
25	359	273 17 6.7	16 23.7	152.93	0.33	.9927336	6.9	5 44 56.29
26	360	274 18 17.1	17 33.9	152.94	0.27	.9927180	6.2	5 41 0.37
27	361	275 19 27.7	18 44.4	152.94	0.18	.9927041	5.5	5 37 4.46
28	362	276 20 38.3	19 54.9	152.94	+0.08	.9926919	4.7	5 33 8.55
29	363	277 21 48.9	21 5.3	152.94	—0.04	.9926816	4.0	5 29 12.65
30	364	278 22 59.5	22 15.7	152.94	0.17	.9926730	3.2	5 25 16.74
31	365	279 24 10.0	23 26.0	152.94	0.30	.9926662	2.4	5 21 20.83
32	366	280 25 20.4	24 36.3	152.93	—0.43	9.9926615	1.5	5 17 24.92

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 46.8	14 48.4	54 7.7	+0.42	54 13.9	+0.62	4 1.8	1.90	5.3
2	14 50.8	14 53.8	54 22.5	0.82	54 33.5	1.02	4 47.2	1.88	6.3
3	14 57.5	15 1.8	54 47.1	1.23	55 3.1	1.43	5 32.0	1.86	7.3
4	15 6.8	15 12.9	55 21.5	1.63	55 42.2	1.62	6 16.7	1.87	8.3
5	15 18.7	15 25.5	56 5.1	1.99	56 30.0	2.15	7 2.0	1.91	9.3
6	15 32.7	15 40.3	56 56.6	2.27	57 24.4	2.35	7 48.7	1.99	10.3
7	15 48.1	15 56.0	57 53.1	2.40	58 22.0	2.30	8 37.6	2.10	11.3
8	16 3.8	16 11.3	58 50.5	2.34	59 18.1	2.23	9 29.5	2.23	12.3
9	16 18.3	16 24.7	59 44.0	2.05	60 7.3	1.82	10 24.9	2.39	13.3
10	16 30.2	16 34.7	60 27.6	1.53	60 44.2	1.21	11 23.8	2.52	14.3
11	16 38.1	16 40.3	60 56.6	0.85	61 4.5	+0.47	12 25.4	2.60	15.3
12	16 41.1	16 40.8	61 7.8	+0.08	61 6.4	−0.31	13 28.1	2.60	16.3
13	16 39.1	16 36.3	61 0.4	−0.68	60 50.1	1.02	14 29.7	2.52	17.3
14	16 32.5	16 27.7	60 36.0	1.31	60 18.6	1.56	15 28.9	2.40	18.3
15	16 22.3	16 16.3	59 58.5	1.76	59 36.4	1.90	16 24.6	2.25	19.3
16	16 9.8	16 3.2	59 12.9	1.99	58 48.5	2.04	17 17.1	2.13	20.3
17	15 56.5	15 49.9	58 23.9	2.04	57 59.5	2.01	18 6.8	2.03	21.3
18	15 43.4	15 37.1	57 35.7	1.95	57 12.7	1.87	18 54.7	1.96	22.3
19	15 31.1	15 25.5	56 50.7	1.78	56 30.1	1.67	19 41.4	1.93	23.3
20	15 20.2	15 15.4	56 10.7	1.56	55 52.7	1.44	20 27.7	1.93	24.3
21	15 10.8	15 6.7	55 36.1	1.33	55 20.9	1.21	21 14.2	1.95	25.3
22	15 2.9	14 59.5	55 7.0	1.10	54 54.5	0.99	22 1.1	1.97	26.3
23	14 56.4	14 53.7	54 43.2	0.89	54 33.2	0.79	22 48.7	1.99	27.3
24	14 51.3	14 49.2	54 24.4	0.68	54 16.8	0.58	23 36.6	2.00	28.3
25	14 47.5	14 46.1	54 10.4	0.49	54 5.1	0.39			29.3
26	14 44.9	14 44.2	54 1.1	0.29	53 58.2	−0.20	0 24.5	1.99	0.5
27	14 43.8	14 43.8	53 56.7	−0.07	53 56.5	+0.05	1 11.9	1.96	1.5
28	14 44.1	14 44.9	53 57.9	+0.18	54 0.8	0.31	1 58.5	1.92	2.5
29	14 46.1	14 47.9	54 5.4	0.46	54 11.8	0.62	2 44.2	1.88	3.5
30	14 50.1	14 52.9	54 20.1	0.78	54 30.4	0.95	3 28.9	1.85	4.5
31	14 56.3	15 0.3	54 42.9	1.12	54 57.4	1.30	4 13.1	1.84	5.5
32	15 4.8	15 10.0	55 14.1	+1.48	55 32.9	+1.66	4 57.2	1.83	6.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 33 52.29	2.0165	S.15 57 18.5	5.190	0	22 9 21.00	1.9704	S.10 33 34.3	8.143
1	20 35 53.24	2.0152	15 52 5.0	5.261	1	22 11 19.21	1.9701	10 25 24.2	8.194
2	20 37 54.11	2.0138	15 46 47.2	5.332	2	22 13 17.41	1.9698	10 17 11.0	8.245
3	20 39 54.90	2.0124	15 41 25.2	5.402	3	22 15 15.59	1.9696	10 8 54.8	8.295
4	20 41 55.60	2.0110	15 35 59.0	5.472	4	22 17 13.75	1.9693	10 0 35.5	8.345
5	20 43 56.22	2.0097	15 30 28.6	5.541	5	22 19 11.90	1.9692	9 52 13.3	8.395
6	20 45 56.76	2.0084	15 24 54.1	5.610	6	22 21 10.05	1.9690	9 43 48.1	8.444
7	20 47 57.22	2.0071	15 19 15.5	5.678	7	22 23 8.19	1.9689	9 35 20.0	8.493
8	20 49 57.61	2.0058	15 13 32.8	5.746	8	22 25 6.32	1.9689	9 26 48.9	8.541
9	20 51 57.92	2.0045	15 7 46.0	5.813	9	22 27 4.45	1.9689	9 18 15.0	8.589
10	20 53 58.15	2.0032	15 1 55.2	5.881	10	22 29 2.59	1.9689	9 9 38.2	8.636
11	20 55 58.30	2.0019	14 56 0.3	5.948	11	22 31 0.72	1.9690	9 0 58.6	8.683
12	20 57 58.38	2.0006	14 50 1.4	6.015	12	22 32 58.86	1.9691	8 52 16.2	8.730
13	20 59 58.38	1.9994	14 43 58.5	6.081	13	22 34 57.01	1.9693	8 43 31.0	8.776
14	21 1 58.31	1.9982	14 37 51.7	6.147	14	22 36 55.17	1.9694	8 34 43.1	8.821
15	21 3 58.17	1.9970	14 31 40.9	6.212	15	22 38 53.34	1.9696	8 25 52.5	8.866
16	21 5 57.95	1.9958	14 25 26.2	6.277	16	22 40 51.52	1.9699	8 16 59.2	8.910
17	21 7 57.67	1.9947	14 19 7.6	6.342	17	22 42 49.72	1.9703	8 8 3.3	8.954
18	21 9 57.31	1.9935	14 12 45.2	6.406	18	22 44 47.95	1.9706	7 59 4.7	8.998
19	21 11 56.88	1.9923	14 6 18.9	6.470	19	22 46 46.20	1.9710	7 50 3.5	9.041
20	21 13 56.39	1.9912	13 59 48.8	6.534	20	22 48 44.47	1.9714	7 40 59.8	9.083
21	21 15 55.83	1.9901	13 53 14.9	6.597	21	22 50 42.77	1.9719	7 31 53.6	9.126
22	21 17 55.20	1.9890	13 46 37.2	6.660	22	22 52 41.10	1.9724	7 22 44.8	9.167
23	21 19 54.51	1.9880	S.13 39 55.8	6.722	23	22 54 39.46	1.9730	S. 7 13 33.5	9.208
	MONDAY 2.					WEDNESDAY 4.			
0	21 21 53.76	1.9870	S.13 33 10.6	6.784	0	22 56 37.86	1.9736	S. 7 4 19.8	9.248
1	21 23 52.95	1.9860	13 26 21.7	6.845	1	22 58 36.29	1.9743	6 55 3.6	9.288
2	21 25 52.08	1.9850	13 19 29.2	6.906	2	23 0 34.77	1.9750	6 45 45.1	9.328
3	21 27 51.15	1.9840	13 12 33.0	6.967	3	23 2 33.29	1.9758	6 36 24.2	9.367
4	21 29 50.16	1.9831	13 5 33.2	7.027	4	23 4 31.86	1.9765	6 27 1.1	9.405
5	21 31 49.12	1.9822	12 58 29.8	7.087	5	23 6 30.47	1.9773	6 17 35.6	9.443
6	21 33 48.02	1.9813	12 51 22.9	7.146	6	23 8 29.14	1.9783	6 8 7.8	9.481
7	21 35 46.87	1.9804	12 44 12.4	7.205	7	23 10 27.87	1.9793	5 58 37.8	9.518
8	21 37 45.67	1.9796	12 36 58.3	7.263	8	23 12 26.65	1.9803	5 49 5.7	9.556
9	21 39 44.42	1.9788	12 29 40.8	7.321	9	23 14 25.49	1.9813	5 39 31.4	9.593
10	21 41 43.13	1.9780	12 22 19.8	7.379	10	23 16 24.40	1.9823	5 29 54.9	9.630
11	21 43 41.79	1.9773	12 14 55.3	7.436	11	23 18 23.37	1.9834	5 20 16.3	9.665
12	21 45 40.40	1.9766	12 7 27.4	7.493	12	23 20 22.41	1.9846	5 10 35.7	9.699
13	21 47 38.98	1.9759	11 59 56.1	7.550	13	23 22 21.52	1.9858	5 0 53.0	9.733
14	21 49 37.51	1.9752	11 52 21.4	7.606	14	23 24 20.70	1.9871	4 51 8.3	9.766
15	21 51 36.00	1.9746	11 44 43.4	7.662	15	23 26 19.96	1.9884	4 41 21.6	9.798
16	21 53 34.46	1.9740	11 37 2.0	7.718	16	23 28 19.31	1.9898	4 31 33.1	9.829
17	21 55 32.88	1.9734	11 29 17.3	7.773	17	23 30 18.74	1.9912	4 21 42.5	9.859
18	21 57 31.27	1.9728	11 21 29.3	7.827	18	23 32 18.25	1.9927	4 11 50.1	9.889
19	21 59 29.63	1.9723	11 13 38.1	7.881	19	23 34 17.85	1.9942	4 1 55.9	9.919
20	22 1 27.95	1.9718	11 5 43.7	7.934	20	23 36 17.55	1.9957	3 51 59.8	9.949
21	22 3 26.25	1.9714	10 57 46.1	7.987	21	23 38 17.34	1.9973	3 42 2.0	9.978
22	22 5 24.52	1.9710	10 49 45.3	8.040	22	23 40 17.23	1.9990	3 32 2.4	10.007
23	22 7 22.77	1.9707	10 41 41.4	8.092	23	23 42 17.22	2.0008	3 22 1.1	10.035
24	22 9 21.00	1.9704	S.10 33 34.3	8.143	24	23 44 17.32	2.0026	S. 3 11 58.1	10.063

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 44 17.32	2.0026	S. 3 11 58.1	10.062
1	23 46 17.52	2.0043	3 1 53.5	10.089
2	23 48 17.84	2.0062	2 51 47.4	10.115
3	23 50 18.27	2.0083	2 41 39.7	10.141
4	23 52 18.82	2.0102	2 31 30.5	10.166
5	23 54 19.49	2.0122	2 21 19.8	10.190
6	23 56 20.28	2.0142	2 11 7.7	10.213
7	23 58 21.20	2.0163	2 0 54.2	10.236
8	0 0 22.24	2.0185	1 50 39.4	10.258
9	0 2 23.42	2.0208	1 40 23.2	10.280
10	0 4 24.73	2.0231	1 30 5.8	10.301
11	0 6 26.18	2.0254	1 19 47.1	10.321
12	0 8 27.78	2.0278	1 9 27.3	10.340
13	0 10 29.52	2.0303	0 59 6.3	10.359
14	0 12 31.41	2.0328	0 48 44.2	10.377
15	0 14 33.45	2.0353	0 38 21.0	10.395
16	0 16 35.65	2.0379	0 27 56.8	10.412
17	0 18 38.00	2.0406	0 17 31.6	10.428
18	0 20 40.52	2.0433	S. 0 7 5.4	10.443
19	0 22 43.20	2.0461	N. 0 3 21.7	10.456
20	0 24 46.05	2.0489	0 13 49.6	10.472
21	0 26 49.07	2.0518	0 24 18.3	10.486
22	0 28 52.27	2.0548	0 34 47.8	10.497
23	0 30 55.64	2.0578	N. 0 45 18.0	10.509

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 32 59.20	2.0608	N. 0 55 48.9	10.519
1	0 35 2.94	2.0639	1 6 20.4	10.529
2	0 37 6.87	2.0671	1 16 52.4	10.538
3	0 39 10.99	2.0703	1 27 24.9	10.546
4	0 41 15.30	2.0735	1 37 57.9	10.554
5	0 43 19.81	2.0768	1 48 31.4	10.561
6	0 45 24.52	2.0802	1 59 5.2	10.567
7	0 47 29.43	2.0836	2 9 39.4	10.573
8	0 49 34.55	2.0871	2 20 13.9	10.577
9	0 51 39.88	2.0906	2 30 48.6	10.580
10	0 53 45.42	2.0942	2 41 23.5	10.582
11	0 55 51.18	2.0978	2 51 58.5	10.583
12	0 57 57.16	2.1015	3 2 33.5	10.583
13	1 0 3.36	2.1053	3 13 8.5	10.583
14	1 2 9.79	2.1090	3 23 43.5	10.582
15	1 4 16.44	2.1128	3 34 18.4	10.581
16	1 6 23.33	2.1167	3 44 53.2	10.578
17	1 8 30.45	2.1207	3 55 27.7	10.573
18	1 10 37.81	2.1247	4 6 2.0	10.568
19	1 12 45.41	2.1288	4 16 35.9	10.563
20	1 14 53.26	2.1329	4 27 9.5	10.556
21	1 17 1.35	2.1370	4 37 42.6	10.548
22	1 19 9.70	2.1412	4 48 15.2	10.539
23	1 21 18.30	2.1455	4 58 47.3	10.529
24	1 23 27.16	2.1498	N. 5 9 18.7	10.518

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 23 27.16	2.1498	N. 5 9 18.7	10.518
1	1 25 36.27	2.1541	5 19 49.4	10.506
2	1 27 45.65	2.1585	5 30 19.4	10.493
3	1 29 55.29	2.1629	5 40 48.6	10.479
4	1 32 5.20	2.1674	5 51 16.9	10.463
5	1 34 15.38	2.1720	6 1 44.3	10.447
6	1 36 25.84	2.1766	6 12 10.6	10.430
7	1 38 36.57	2.1812	6 22 35.9	10.418
8	1 40 47.58	2.1859	6 33 0.1	10.394
9	1 42 58.87	2.1906	6 43 23.1	10.378
10	1 45 10.45	2.1954	6 53 44.8	10.361
11	1 47 22.31	2.2002	7 4 5.2	10.328
12	1 49 34.47	2.2050	7 14 24.2	10.304
13	1 51 46.92	2.2099	7 24 41.7	10.279
14	1 53 59.66	2.2148	7 34 57.7	10.253
15	1 56 12.70	2.2198	7 45 12.1	10.226
16	1 58 26.04	2.2248	7 55 24.8	10.197
17	2 0 39.68	2.2298	8 5 35.7	10.167
18	2 2 53.62	2.2349	8 15 44.8	10.136
19	2 5 7.87	2.2401	8 25 52.0	10.103
20	2 7 22.43	2.2452	8 35 57.2	10.069
21	2 9 37.30	2.2504	8 46 0.4	10.035
22	2 11 52.48	2.2556	8 56 1.4	9.999
23	2 14 7.98	2.2609	N. 9 6 0.2	9.963

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 16 23.79	2.2662	N. 9 15 56.8	9.924
1	2 18 39.92	2.2715	9 25 51.1	9.884
2	2 20 56.37	2.2769	9 35 42.9	9.843
3	2 23 13.14	2.2823	9 45 32.2	9.800
4	2 25 30.24	2.2877	9 55 18.9	9.756
5	2 27 47.66	2.2931	10 5 2.9	9.712
6	2 30 5.41	2.2986	10 14 44.3	9.666
7	2 32 23.49	2.3041	10 24 22.9	9.618
8	2 34 41.90	2.3096	10 33 58.5	9.569
9	2 37 0.64	2.3151	10 43 31.2	9.519
10	2 39 19.71	2.3207	10 53 0.8	9.467
11	2 41 39.12	2.3263	11 2 27.3	9.414
12	2 43 58.86	2.3318	11 11 50.5	9.360
13	2 46 18.94	2.3374	11 21 10.4	9.304
14	2 48 39.35	2.3430	11 30 27.0	9.247
15	2 51 0.10	2.3487	11 39 40.1	9.189
16	2 53 21.19	2.3543	11 48 49.7	9.130
17	2 55 42.62	2.3600	11 57 55.6	9.068
18	2 58 4.39	2.3656	12 6 57.8	9.006
19	3 0 26.50	2.3713	12 15 56.2	8.941
20	3 2 48.94	2.3769	12 24 50.7	8.876
21	3 5 11.72	2.3826	12 33 41.3	8.809
22	3 7 34.85	2.3883	12 42 27.8	8.740
23	3 9 58.32	2.3940	12 51 10.1	8.671
24	3 12 22.13	2.3996	N.12 59 48.3	8.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 12 22.13	2.3996	N.12 59 48.3	8.601
1	3 14 46.28	2.4053	13 8 22.2	8.528
2	3 17 10.77	2.4110	13 16 51.6	8.454
3	3 19 35.60	2.4167	13 25 16.6	8.378
4	3 22 0.77	2.4223	13 33 37.0	8.301
5	3 24 26.28	2.4279	13 41 52.8	8.223
6	3 26 52.12	2.4336	13 50 3.8	8.143
7	3 29 18.30	2.4392	13 58 10.1	8.063
8	3 31 44.82	2.4448	14 6 11.4	7.981
9	3 34 11.67	2.4503	14 14 7.7	7.897
10	3 36 38.86	2.4558	14 21 59.0	7.812
11	3 39 6.37	2.4613	14 29 45.1	7.726
12	3 41 34.22	2.4668	14 37 26.0	7.637
13	3 44 2.40	2.4723	14 45 1.6	7.540
14	3 46 30.90	2.4778	14 52 31.7	7.457
15	3 48 59.73	2.4832	14 59 56.3	7.364
16	3 51 28.88	2.4885	15 7 15.4	7.270
17	3 53 58.35	2.4938	15 14 28.8	7.176
18	3 56 28.14	2.4991	15 21 36.5	7.080
19	3 58 58.24	2.5043	15 28 38.3	6.982
20	4 1 28.66	2.5096	15 35 34.3	6.883
21	4 3 59.39	2.5148	15 42 24.2	6.781
22	4 6 30.43	2.5198	15 49 8.1	6.680
23	4 9 1.77	2.5248	N.15 55 45.9	6.578

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 11 33.41	2.5298	N.16 2 17.4	6.474
1	4 14 5.35	2.5348	16 8 42.7	6.368
2	4 16 37.59	2.5397	16 15 1.5	6.261
3	4 19 10.12	2.5446	16 21 13.9	6.152
4	4 21 42.94	2.5493	16 27 19.7	6.042
5	4 24 16.04	2.5540	16 33 18.9	5.932
6	4 26 49.42	2.5587	16 39 11.5	5.820
7	4 29 23.08	2.5633	16 44 57.3	5.707
8	4 31 57.01	2.5678	16 50 36.3	5.593
9	4 34 31.21	2.5722	16 56 8.4	5.477
10	4 37 5.67	2.5765	17 1 33.5	5.360
11	4 39 40.39	2.5808	17 6 51.6	5.242
12	4 42 15.36	2.5850	17 12 2.5	5.123
13	4 44 50.58	2.5891	17 17 6.3	5.003
14	4 47 26.05	2.5931	17 22 2.8	4.882
15	4 50 1.76	2.5971	17 26 52.0	4.759
16	4 52 37.70	2.6009	17 31 33.9	4.636
17	4 55 13.87	2.6047	17 36 8.3	4.512
18	4 57 50.26	2.6084	17 40 35.3	4.387
19	5 0 26.87	2.6120	17 44 54.7	4.260
20	5 3 3.70	2.6154	17 49 6.5	4.133
21	5 5 40.73	2.6188	17 53 10.7	4.006
22	5 8 17.96	2.6221	17 57 7.1	3.876
23	5 10 55.39	2.6253	18 0 55.8	3.746
24	5 13 33.00	2.6283	N.18 4 36.6	3.615

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 13 33.00	2.6283	N.18 4 36.6	3.616
1	5 16 10.80	2.6314	18 8 9.6	3.483
2	5 18 48.77	2.6342	18 11 34.6	3.351
3	5 21 26.91	2.6370	18 14 51.8	3.218
4	5 24 5.21	2.6397	18 18 1.0	3.084
5	5 26 43.67	2.6423	18 21 2.0	2.949
6	5 29 22.28	2.6447	18 23 54.9	2.814
7	5 32 1.03	2.6469	18 26 39.6	2.678
8	5 34 39.91	2.6491	18 29 16.2	2.541
9	5 37 18.92	2.6513	18 31 44.5	2.403
10	5 39 58.06	2.6532	18 34 4.6	2.266
11	5 42 37.31	2.6550	18 36 16.3	2.128
12	5 45 16.66	2.6567	18 38 19.8	1.989
13	5 47 56.12	2.6584	18 40 15.0	1.850
14	5 50 35.67	2.6599	18 42 1.8	1.710
15	5 53 15.31	2.6613	18 43 40.2	1.570
16	5 55 55.02	2.6625	18 45 10.2	1.430
17	5 58 34.80	2.6636	18 46 31.8	1.289
18	6 1 14.65	2.6645	18 47 44.9	1.148
19	6 3 54.55	2.6654	18 48 49.5	1.007
20	6 6 34.50	2.6661	18 49 45.7	0.866
21	6 9 14.49	2.6668	18 50 33.4	0.724
22	6 11 54.52	2.6673	18 51 12.6	0.582
23	6 14 34.57	2.6677	N.18 51 43.3	0.440

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 17 14.64	2.6679	N.18 52 5.4	0.298
1	6 19 54.72	2.6680	18 52 19.0	0.156
2	6 22 34.80	2.6680	18 52 24.1	0.014
3	6 25 14.88	2.6679	18 52 20.7	0.128
4	6 27 54.95	2.6677	18 52 8.8	0.270
5	6 30 35.00	2.6673	18 51 48.3	0.412
6	6 33 15.02	2.6667	18 51 19.3	0.554
7	6 35 55.00	2.6660	18 50 41.8	0.696
8	6 38 34.94	2.6652	18 49 55.8	0.838
9	6 41 14.83	2.6643	18 49 1.3	0.979
10	6 43 54.66	2.6633	18 47 58.3	1.120
11	6 46 34.43	2.6623	18 46 46.9	1.261
12	6 49 14.13	2.6610	18 45 27.0	1.402
13	6 51 53.75	2.6596	18 43 58.7	1.542
14	6 54 33.28	2.6580	18 42 22.0	1.682
15	6 57 12.72	2.6564	18 40 36.9	1.821
16	6 59 52.05	2.6546	18 38 43.5	1.960
17	7 2 31.28	2.6528	18 36 41.7	2.098
18	7 5 10.39	2.6508	18 34 31.7	2.236
19	7 7 49.38	2.6488	18 32 13.4	2.373
20	7 10 28.24	2.6466	18 29 46.9	2.510
21	7 13 6.97	2.6443	18 27 12.2	2.647
22	7 15 45.55	2.6418	18 24 29.3	2.783
23	7 18 23.98	2.6393	18 21 38.3	2.918
24	7 21 2.26	2.6366	N.18 18 39.2	3.052

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 21 2.26	2.6366	N.18 18 39.2	3.052	0	9 22 58.94	2.4230	N.13 35 50.3	8.282
1	7 23 40.37	2.6338	18 15 32.1	3.186	1	9 25 24.16	2.4176	13 27 31.0	8.360
2	7 26 18.32	2.6310	18 12 16.9	3.318	2	9 27 49.05	2.4122	13 19 7.1	8.437
3	7 28 56.09	2.6281	18 8 53.9	3.450	3	9 30 13.62	2.4068	13 10 38.6	8.512
4	7 31 33.69	2.6250	18 5 22.9	3.581	4	9 82 37.87	2.4014	13 2 5.6	8.586
5	7 34 11.10	2.6219	18 1 44.1	3.712	5	9 35 1.80	2.3961	12 53 28.3	8.658
6	7 36 48.32	2.6186	17 57 57.4	3.842	6	9 37 25.40	2.3907	12 44 46.6	8.729
7	7 39 25.34	2.6153	17 54 3.0	3.971	7	9 39 48.69	2.3854	12 36 0.7	8.800
8	7 42 2.15	2.6118	17 50 0.9	4.099	8	9 42 11.65	2.3800	12 27 10.6	8.869
9	7 44 38.76	2.6083	17 45 51.1	4.226	9	9 44 34.29	2.3747	12 18 16.5	8.936
10	7 47 15.15	2.6047	17 41 33.8	4.352	10	9 46 56.61	2.3693	12 9 18.3	9.002
11	7 49 51.32	2.6010	17 37 8.9	4.477	11	9 49 18.61	2.3640	12 0 16.2	9.067
12	7 52 27.27	2.5972	17 32 36.6	4.601	12	9 51 40.29	2.3587	11 51 10.3	9.130
13	7 55 2.99	2.5933	17 27 56.8	4.724	13	9 54 1.65	2.3534	11 42 0.6	9.192
14	7 57 38.47	2.5893	17 23 9.7	4.846	14	9 56 22.70	2.3482	11 32 47.3	9.253
15	8 0 13.71	2.5853	17 18 15.3	4.967	15	9 58 43.44	2.3430	11 23 30.4	9.312
16	8 2 48.71	2.5812	17 13 13.7	5.087	16	10 1 3.86	2.3378	11 14 9.9	9.370
17	8 5 23.46	2.5770	17 8 4.9	5.205	17	10 3 23.97	2.3326	11 4 46.0	9.427
18	8 7 57.95	2.5728	17 2 49.1	5.323	18	10 5 43.77	2.3274	10 55 18.7	9.482
19	8 10 32.19	2.5685	16 57 26.2	5.440	19	10 8 3.26	2.3222	10 45 48.2	9.536
20	8 13 6.17	2.5641	16 51 56.3	5.556	20	10 10 22.43	2.3170	10 36 14.4	9.589
21	8 15 39.89	2.5597	16 46 19.5	5.670	21	10 12 41.30	2.3119	10 26 37.5	9.641
22	8 18 13.33	2.5551	16 40 35.9	5.783	22	10 14 59.86	2.3068	10 16 57.5	9.692
23	8 20 46.50	2.5505	N.16 34 45.5	5.896	23	10 17 18.12	2.3018	N.10 7 14.5	9.741
	SATURDAY 14.					**MONDAY 16.**			
0	8 23 19.38	2.5459	N.16 28 48.5	6.006	0	10 19 36.08	2.2968	N. 9 57 28.6	9.788
1	8 25 51.99	2.5412	16 22 44.8	6.116	1	10 21 53.74	2.2918	9 47 39.9	9.834
2	8 28 24.32	2.5365	16 16 34.6	6.224	2	10 24 11.10	2.2869	9 37 48.5	9.879
3	8 30 56.37	2.5317	16 10 17.9	6.331	3	10 26 28.17	2.2820	9 27 54.4	9.923
4	8 33 28.12	2.5268	16 3 54.9	6.437	4	10 28 44.94	2.2771	9 17 57.7	9.976
5	8 35 59.58	2.5218	15 57 25.5	6.542	5	10 31 1.42	2.2723	9 7 58.5	10.008
6	8 38 30.74	2.5169	15 50 49.9	6.646	6	10 33 17.61	2.2675	8 57 56.8	10.048
7	8 41 1.61	2.5120	15 44 8.1	6.748	7	10 35 33.51	2.2627	8 47 52.7	10.088
8	8 43 32.18	2.5070	15 37 20.2	6.849	8	10 37 49.13	2.2580	8 37 46.3	10.126
9	8 46 2.45	2.5019	15 30 26.3	6.948	9	10 40 4.47	2.2533	8 27 37.7	10.162
10	8 48 32.41	2.4968	15 23 26.5	7.046	10	10 42 19.52	2.2486	8 17 26.9	10.197
11	8 51 2.06	2.4917	15 16 20.8	7.143	11	10 44 34.30	2.2440	8 7 14.0	10.232
12	8 53 31.41	2.4865	15 9 9.3	7.239	12	10 46 48.79	2.2394	7 56 59.1	10.265
13	8 56 0.45	2.4813	15 1 52.1	7.333	13	10 49 3.02	2.2349	7 46 42.2	10.297
14	8 58 29.17	2.4761	14 54 29.3	7.426	14	10 51 16.98	2.2304	7 36 23.5	10.328
15	9 0 57.58	2.4708	14 47 1.0	7.518	15	10 53 30.67	2.2259	7 26 2.9	10.358
16	9 3 25.67	2.4656	14 39 27.2	7.608	16	10 55 44.09	2.2216	7 15 40.6	10.386
17	9 5 53.45	2.4603	14 31 48.0	7.697	17	10 57 57.25	2.2173	7 5 16.6	10.413
18	9 8 20.91	2.4550	14 24 3.6	7.785	18	11 0 10.16	2.2130	6 54 51.0	10.439
19	9 10 48.05	2.4497	14 16 13.9	7.871	19	11 2 22.81	2.2087	6 44 23.9	10.464
20	9 13 14.87	2.4444	14 8 19.1	7.956	20	11 4 35.20	2.2045	6 33 55.3	10.488
21	9 15 41.37	2.4390	14 0 19.2	8.039	21	11 6 47.34	2.2003	6 23 25.3	10.511
22	9 18 7.55	2.4337	13 52 14.4	8.121	22	11 8 59.24	2.1962	6 12 54.0	10.533
23	9 20 33.41	2.4283	13 44 4.7	8.202	23	11 11 10.89	2.1922	6 2 21.4	10.554
24	9 22 58.94	2.4230	N.13 35 50.3	8.282	24	11 13 22.30	2.1882	N. 5 51 47.6	10.574

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 13 22.30	2.1882	N. 5 51 47.6	10.574
1	11 15 33.47	2.1842	5 41 12.6	10.593
2	11 17 44.40	2.1803	5 30 36.5	10.611
3	11 19 55.10	2.1764	5 19 59.4	10.627
4	11 22 5.57	2.1726	5 9 21.3	10.642
5	11 24 15.81	2.1688	4 58 42.3	10.657
6	11 26 25.83	2.1651	4 48 2.5	10.671
7	11 28 35.63	2.1615	4 37 21.9	10.683
8	11 30 45.21	2.1579	4 26 40.5	10.694
9	11 32 54.58	2.1543	4 15 58.5	10.705
10	11 35 3.73	2.1508	4 5 15.9	10.715
11	11 37 12.67	2.1473	3 54 32.8	10.723
12	11 39 21.40	2.1440	3 43 49.2	10.730
13	11 41 29.94	2.1407	3 33 5.2	10.737
14	11 43 38.28	2.1374	3 22 20.8	10.743
15	11 45 46.42	2.1341	3 11 36.1	10.747
16	11 47 54.37	2.1309	3 0 51.2	10.751
17	11 50 2.13	2.1278	2 50 6.1	10.753
18	11 52 9.70	2.1247	2 39 20.8	10.754
19	11 54 17.09	2.1217	2 28 35.5	10.755
20	11 56 24.30	2.1187	2 17 50.2	10.755
21	11 58 31.34	2.1158	2 7 4.9	10.755
22	12 0 38.20	2.1129	1 56 19.6	10.753
23	12 2 44.89	2.1101	N. 1 45 34.5	10.750

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 4 51.41	2.1074	N. 1 34 49.4	10.747
1	12 6 57.77	2.1047	1 24 4.7	10.743
2	12 9 3.97	2.1020	1 13 20.3	10.738
3	12 11 10.01	2.0994	1 2 36.2	10.732
4	12 13 15.90	2.0969	0 51 52.5	10.725
5	12 15 21.64	2.0944	0 41 9.2	10.717
6	12 17 27.23	2.0920	0 30 26.5	10.708
7	12 19 32.68	2.0896	0 19 44.3	10.698
8	12 21 37.98	2.0873	N. 0 9 2.8	10.687
9	12 23 43.15	2.0850	S. 0 1 38.1	10.676
10	12 25 48.18	2.0828	0 12 18.3	10.664
11	12 27 53.08	2.0807	0 22 57.8	10.652
12	12 29 57.85	2.0786	0 33 36.5	10.639
13	12 32 2.50	2.0766	0 44 14.3	10.624
14	12 34 7.03	2.0746	0 54 51.3	10.609
15	12 36 11.44	2.0726	1 5 27.3	10.593
16	12 38 15.73	2.0706	1 16 2.4	10.576
17	12 40 19.91	2.0688	1 26 36.5	10.559
18	12 42 23.98	2.0670	1 37 9.5	10.541
19	12 44 27.94	2.0652	1 47 41.3	10.521
20	12 46 31.80	2.0635	1 58 12.0	10.501
21	12 48 35.56	2.0618	2 8 41.5	10.481
22	12 50 39.22	2.0602	2 19 9.7	10.460
23	12 52 42.79	2.0587	2 29 36.7	10.439
24	12 54 46.25	2.0572	S. 2 40 2.3	10.417

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 54 46.25	2.0572	S. 2 40 2.3	10.417
1	12 56 49.64	2.0558	2 50 26.6	10.393
2	12 58 52.94	2.0543	3 0 49.4	10.368
3	13 0 56.16	2.0529	3 11 10.7	10.343
4	13 2 59.29	2.0516	3 21 30.5	10.314
5	13 5 2.35	2.0504	3 31 48.7	10.290
6	13 7 5.34	2.0492	3 42 5.3	10.263
7	13 9 8.25	2.0480	3 52 20.2	10.236
8	13 11 11.10	2.0469	4 2 33.5	10.206
9	13 13 13.88	2.0458	4 12 45.0	10.177
10	13 15 16.60	2.0448	4 22 54.7	10.147
11	13 17 19.26	2.0439	4 33 2.6	10.117
12	13 19 21.87	2.0430	4 43 8.7	10.086
13	13 21 24.42	2.0421	4 53 12.9	10.054
14	13 23 26.92	2.0412	5 3 15.2	10.021
15	13 25 29.37	2.0404	5 13 15.5	9.988
16	13 27 31.77	2.0397	5 23 13.8	9.954
17	13 29 34.13	2.0390	5 33 10.0	9.920
18	13 31 36.45	2.0383	5 43 4.2	9.885
19	13 33 38.73	2.0377	5 52 56.2	9.849
20	13 35 40.97	2.0371	6 2 46.0	9.812
21	13 37 43.18	2.0365	6 12 33.6	9.775
22	13 39 45.35	2.0360	6 22 19.0	9.737
23	13 41 47.50	2.0356	S. 6 32 2.1	9.699

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 43 49.61	2.0352	S. 6 41 42.9	9.660
1	13 45 51.71	2.0348	6 51 21.3	9.620
2	13 47 53.78	2.0345	7 0 57.3	9.580
3	13 49 55.84	2.0342	7 10 30.9	9.539
4	13 51 57.88	2.0339	7 20 2.0	9.497
5	13 53 59.91	2.0337	7 29 30.6	9.455
6	13 56 1.92	2.0335	7 38 56.6	9.412
7	13 58 3.92	2.0333	7 48 20.0	9.368
8	14 0 5.92	2.0332	7 57 40.8	9.324
9	14 2 7.91	2.0331	8 6 58.9	9.279
10	14 4 9.89	2.0331	8 16 14.3	9.234
11	14 6 11.87	2.0331	8 25 27.0	9.188
12	14 8 13.86	2.0332	8 34 36.9	9.142
13	14 10 15.85	2.0332	8 43 44.0	9.096
14	14 12 17.84	2.0333	8 52 48.3	9.047
15	14 14 19.84	2.0334	9 1 49.7	8.999
16	14 16 21.85	2.0336	9 10 48.2	8.950
17	14 18 23.87	2.0338	9 19 43.7	8.901
18	14 20 25.90	2.0340	9 28 36.3	8.851
19	14 22 27.94	2.0342	9 37 25.8	8.800
20	14 24 30.00	2.0345	9 46 12.3	8.749
21	14 26 32.07	2.0348	9 54 55.7	8.697
22	14 28 34.17	2.0351	10 3 36.0	8.645
23	14 30 36.29	2.0355	10 12 13.1	8.593
24	14 32 38.42	2.0359	S. 10 20 47.1	8.540

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 32 38.42	2.0359	S.10 20 47.1	8.540
1	14 34 40.59	2.0363	10 29 17.8	8.486
2	14 36 42.78	2.0367	10 37 45.3	8.431
3	14 38 45.00	2.0372	10 46 9.5	8.376
4	14 40 47.24	2.0377	10 54 30.4	8.320
5	14 42 49.51	2.0382	11 2 47.9	8.264
6	14 44 51.82	2.0387	11 11 2.0	8.207
7	14 46 54.16	2.0393	11 19 12.7	8.150
8	14 48 56.53	2.0398	11 27 20.0	8.092
9	14 50 58.94	2.0404	11 35 23.7	8.034
10	14 53 1.38	2.0411	11 43 24.0	7.975
11	14 55 3.86	2.0418	11 51 20.7	7.916
12	14 57 6.39	2.0424	11 59 13.9	7.856
13	14 59 8.95	2.0431	12 7 3.4	7.796
14	15 1 11.56	2.0438	12 14 49.3	7.735
15	15 3 14.21	2.0445	12 22 31.5	7.673
16	15 5 16.90	2.0452	12 30 10.1	7.611
17	15 7 19.63	2.0459	12 37 44.9	7.548
18	15 9 22.41	2.0467	12 45 15.9	7.485
19	15 11 25.24	2.0475	12 52 43.1	7.422
20	15 13 28.11	2.0483	13 0 6.5	7.358
21	15 15 31.03	2.0491	13 7 26.0	7.294
22	15 17 34.00	2.0499	13 14 41.7	7.229
23	15 19 37.02	2.0508	S.13 21 53.4	7.163

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 21 40.08	2.0516	S.13 29 1.2	7.097
1	15 23 43.20	2.0525	13 36 5.0	7.030
2	15 25 46.38	2.0533	13 43 4.8	6.963
3	15 27 49.60	2.0542	13 50 0.6	6.896
4	15 29 52.88	2.0550	13 56 52.3	6.828
5	15 31 56.21	2.0559	14 3 39.9	6.760
6	15 33 59.59	2.0568	14 10 23.4	6.691
7	15 36 3.03	2.0578	14 17 2.8	6.622
8	15 38 6.52	2.0586	14 23 38.0	6.552
9	15 40 10.06	2.0595	14 30 9.0	6.482
10	15 42 13.66	2.0604	14 36 35.8	6.411
11	15 44 17.32	2.0614	14 42 58.3	6.340
12	15 46 21.02	2.0623	14 49 16.7	6.269
13	15 48 24.79	2.0633	14 55 30.7	6.197
14	15 50 28.61	2.0642	15 1 40.3	6.125
15	15 52 32.49	2.0651	15 7 45.6	6.052
16	15 54 36.42	2.0660	15 13 46.5	5.979
17	15 56 40.41	2.0669	15 19 43.0	5.905
18	15 58 44.45	2.0678	15 25 35.1	5.830
19	16 0 48.55	2.0688	15 31 22.7	5.757
20	16 2 52.70	2.0697	15 37 5.9	5.682
21	16 4 56.91	2.0706	15 42 44.5	5.607
22	16 7 1.17	2.0715	15 48 18.7	5.531
23	16 9 5.49	2.0724	15 53 48.2	5.455
24	16 11 9.85	2.0733	S.15 59 13.2	5.379

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 11 9.85	2.0733	S.15 59 13.2	5.379
1	16 13 14.28	2.0743	16 4 33.6	5.302
2	16 15 18.76	2.0752	16 9 49.4	5.225
3	16 17 23.29	2.0760	16 15 0.5	5.147
4	16 19 27.88	2.0769	16 20 7.0	5.069
5	16 21 32.51	2.0777	16 25 8.8	4.991
6	16 23 37.20	2.0786	16 30 5.9	4.912
7	16 25 41.94	2.0794	16 34 58.3	4.833
8	16 27 46.73	2.0802	16 39 46.0	4.754
9	16 29 51.57	2.0810	16 44 28.8	4.674
10	16 31 56.45	2.0819	16 49 6.9	4.594
11	16 34 1.39	2.0827	16 53 40.2	4.514
12	16 36 6.36	2.0835	16 58 8.5	4.434
13	16 38 11.39	2.0842	17 2 32.1	4.353
14	16 40 16.46	2.0850	17 6 50.8	4.272
15	16 42 21.58	2.0857	17 11 4.7	4.190
16	16 44 26.74	2.0864	17 15 13.6	4.108
17	16 46 31.94	2.0871	17 19 17.6	4.026
18	16 48 37.19	2.0878	17 23 16.7	3.944
19	16 50 42.47	2.0884	17 27 10.8	3.861
20	16 52 47.80	2.0891	17 31 0.0	3.778
21	16 54 53.17	2.0898	17 34 44.2	3.695
22	16 56 58.57	2.0904	17 38 23.4	3.612
23	16 59 4.01	2.0910	S.17 41 57.6	3.528

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 1 9.48	2.0916	S.17 45 26.8	3.444
1	17 3 14.99	2.0922	17 48 50.9	3.360
2	17 5 20.54	2.0927	17 52 10.0	3.276
3	17 7 26.11	2.0932	17 55 23.9	3.191
4	17 9 31.72	2.0937	17 58 32.8	3.106
5	17 11 37.36	2.0942	18 1 36.6	3.021
6	17 13 43.02	2.0947	18 4 35.3	2.936
7	17 15 48.71	2.0951	18 7 28.9	2.850
8	17 17 54.43	2.0955	18 10 17.4	2.765
9	17 20 0.17	2.0958	18 13 0.7	2.679
10	17 22 5.93	2.0962	18 15 38.9	2.593
11	17 24 11.71	2.0965	18 18 11.9	2.507
12	17 26 17.51	2.0969	18 20 39.8	2.421
13	17 28 23.33	2.0972	18 23 2.4	2.334
14	17 30 29.17	2.0974	18 25 19.9	2.248
15	17 32 35.02	2.0976	18 27 32.1	2.161
16	17 34 40.88	2.0978	18 29 39.2	2.074
17	17 36 46.75	2.0980	18 31 41.1	1.987
18	17 38 52.64	2.0982	18 33 37.7	1.900
19	17 40 58.53	2.0983	18 35 29.1	1.813
20	17 43 4.43	2.0984	18 37 15.3	1.726
21	17 45 10.34	2.0985	18 38 56.2	1.638
22	17 47 16.25	2.0985	18 40 31.9	1.551
23	17 49 22.16	2.0985	18 42 2.4	1.463
24	17 51 28.07	2.0985	S.18 43 27.7	1.376

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 51 28.07	2.0985	S.18 43 27.7	1.376
1	17 53 33.98	2.0985	18 44 47.6	1.288
2	17 55 39.88	2.0984	18 46 2.3	1.201
3	17 57 45.78	2.0983	18 47 11.7	1.113
4	17 59 51.67	2.0982	18 48 15.9	1.025
5	18 1 57.55	2.0980	18 49 14.8	0.937
6	18 4 3.43	2.0979	18 50 8.4	0.850
7	18 6 9.30	2.0977	18 50 56.8	0.762
8	18 8 15.15	2.0974	18 51 39.9	0.675
9	18 10 20.98	2.0971	18 52 17.7	0.587
10	18 12 26.80	2.0968	18 52 50.3	0.499
11	18 14 32.60	2.0965	18 53 17.6	0.411
12	18 16 38.38	2.0962	18 53 39.7	0.323
13	18 18 44.14	2.0958	18 53 56.4	0.236
14	18 20 49.87	2.0953	18 54 7.9	0.148
15	18 22 55.57	2.0948	18 54 14.1	0.060
16	18 25 1.25	2.0944	18 54 15.1	0.028
17	18 27 6.90	2.0939	18 54 10.8	0.116
18	18 29 12.52	2.0934	18 54 1.2	0.203
19	18 31 18.11	2.0928	18 53 46.4	0.290
20	18 33 23.66	2.0923	18 53 26.4	0.378
21	18 35 29.18	2.0917	18 53 1.1	0.465
22	18 37 34.66	2.0910	18 52 30.6	0.552
23	18 39 40.10	2.0903	S.18 51 54.9	0.638

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 41 45.49	2.0897	S.18 51 14.0	0.725
1	18 43 50.85	2.0890	18 50 27.8	0.812
2	18 45 56.17	2.0882	18 49 36.5	0.899
3	18 48 1.44	2.0874	18 48 40.0	0.985
4	18 50 6.66	2.0866	18 47 38.3	1.072
5	18 52 11.83	2.0858	18 46 31.4	1.158
6	18 54 16.95	2.0850	18 45 19.3	1.244
7	18 56 22.02	2.0841	18 44 2.1	1.330
8	18 58 27.04	2.0832	18 42 39.7	1.416
9	19 0 32.00	2.0822	18 41 12.2	1.501
10	19 2 36.91	2.0813	18 39 39.5	1.587
11	19 4 41.76	2.0803	18 38 1.8	1.672
12	19 6 46.53	2.0793	18 36 19.0	1.757
13	19 8 51.26	2.0783	18 34 31.0	1.842
14	19 10 55.92	2.0772	18 32 38.0	1.926
15	19 13 0.52	2.0761	18 30 39.9	2.010
16	19 15 5.05	2.0750	18 28 36.8	2.094
17	19 17 9.51	2.0738	18 26 28.6	2.178
18	19 19 13.91	2.0727	18 24 15.4	2.262
19	19 21 18.24	2.0716	18 21 57.1	2.346
20	19 23 22.50	2.0704	18 19 33.9	2.429
21	19 25 26.68	2.0691	18 17 5.7	2.512
22	19 27 30.79	2.0679	18 14 32.5	2.595
23	19 29 34.83	2.0667	18 11 54.3	2.677
24	19 31 38.78	2.0654	S.18 9 11.3	2.759

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 31 38.78	2.0654	S.18 9 11.3	2.759
1	19 33 42.66	2.0641	18 6 23.3	2.841
2	19 35 46.47	2.0628	18 3 30.4	2.923
3	19 37 50.20	2.0614	18 0 32.6	3.004
4	19 39 53.84	2.0601	17 57 29.9	3.085
5	19 41 57.41	2.0588	17 54 22.4	3.165
6	19 44 0.89	2.0574	17 51 10.1	3.246
7	19 46 4.29	2.0560	17 47 52.9	3.326
8	19 48 7.61	2.0546	17 44 31.0	3.406
9	19 50 10.84	2.0532	17 41 4.3	3.486
10	19 52 13.99	2.0518	17 37 32.9	3.564
11	19 54 17.05	2.0503	17 33 56.7	3.643
12	19 56 20.01	2.0488	17 30 15.8	3.721
13	19 58 22.89	2.0473	17 26 30.2	3.799
14	20 0 25.69	2.0458	17 22 39.9	3.877
15	20 2 28.39	2.0443	17 18 45.0	3.954
16	20 4 31.01	2.0428	17 14 45.4	4.031
17	20 6 33.53	2.0413	17 10 41.2	4.108
18	20 8 35.97	2.0398	17 6 32.4	4.185
19	20 10 38.31	2.0383	17 2 19.0	4.261
20	20 12 40.56	2.0368	16 58 1.1	4.337
21	20 14 42.72	2.0352	16 53 38.6	4.412
22	20 16 44.78	2.0337	16 49 11.7	4.487
23	20 18 46.75	2.0321	S.16 44 40.2	4.562

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 20 48.62	2.0306	S.16 40 4.4	4.636
1	20 22 50.40	2.0289	16 35 24.1	4.709
2	20 24 52.09	2.0273	16 30 39.3	4.782
3	20 26 53.68	2.0257	16 25 50.2	4.856
4	20 28 55.17	2.0242	16 20 56.7	4.927
5	20 30 56.57	2.0226	16 15 58.9	4.999
6	20 32 57.88	2.0210	16 10 56.8	5.071
7	20 34 59.09	2.0193	16 5 50.4	5.142
8	20 37 0.20	2.0178	16 0 39.7	5.213
9	20 39 1.22	2.0163	15 55 24.8	5.283
10	20 41 2.15	2.0147	15 50 5.7	5.353
11	20 43 2.98	2.0130	15 44 42.4	5.423
12	20 45 3.71	2.0114	15 39 15.0	5.493
13	20 47 4.35	2.0098	15 33 43.4	5.562
14	20 49 4.89	2.0083	15 28 7.6	5.630
15	20 51 5.34	2.0068	15 22 27.8	5.698
16	20 53 5.70	2.0052	15 16 43.9	5.766
17	20 55 5.96	2.0036	15 10 56.0	5.833
18	20 57 6.13	2.0020	15 5 4.0	5.900
19	20 59 6.20	2.0004	14 59 8.0	5.966
20	21 1 6.18	1.9988	14 53 8.1	6.032
21	21 3 6.07	1.9973	14 47 4.2	6.097
22	21 5 5.86	1.9958	14 40 56.5	6.162
23	21 7 5.57	1.9943	14 34 44.9	6.226
24	21 9 5.17	1.9928	S.14 28 29.5	6.290

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 9 5.17	1.9928	S.14 28 29.5	6.290
1	21 11 4.70	1.9913	14 22 10.2	6.353
2	21 13 4.13	1.9898	14 15 47.1	6.416
3	21 15 3.47	1.9883	14 9 20.2	6.479
4	21 17 2.73	1.9868	14 2 49.6	6.541
5	21 19 1.90	1.9854	13 56 15.2	6.603
6	21 21 0.98	1.9840	13 49 37.2	6.664
7	21 22 59.98	1.9826	13 42 55.5	6.725
8	21 24 58.89	1.9812	13 36 10.2	6.786
9	21 26 57.72	1.9798	13 29 21.2	6.846
10	21 28 56.46	1.9784	13 22 28.7	6.906
11	21 30 55.13	1.9771	13 15 32.7	6.964
12	21 32 53.71	1.9757	13 8 33.2	7.022
13	21 34 52.21	1.9744	13 1 30.1	7.080
14	21 36 50.64	1.9731	12 54 23.6	7.138
15	21 38 48.99	1.9718	12 47 13.6	7.195
16	21 40 47.26	1.9705	12 40 0.2	7.252
17	21 42 45.46	1.9693	12 32 43.4	7.308
18	21 44 43.58	1.9681	12 25 23.3	7.363
19	21 46 41.64	1.9670	12 17 59.9	7.418
20	21 48 39.62	1.9658	12 10 33.2	7.473
21	21 50 37.53	1.9647	12 3 3.2	7.527
22	21 52 35.38	1.9635	11 55 30.0	7.581
23	21 54 33.16	1.9624	S.11 47 53.6	7.634

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 56 30.86	1.9613	S.11 40 14.1	7.687
1	21 58 28.51	1.9603	11 32 31.3	7.739
2	22 0 26.10	1.9593	11 24 45.4	7.791
3	22 2 23.62	1.9583	11 16 56.4	7.842
4	22 4 21.09	1.9573	11 9 4.4	7.893
5	22 6 18.50	1.9564	11 1 9.3	7.943
6	22 8 15.86	1.9555	10 53 11.2	7.993
7	22 10 13.16	1.9546	10 45 10.1	8.042
8	22 12 10.41	1.9537	10 37 6.1	8.091
9	22 14 7.61	1.9529	10 28 59.1	8.140
10	22 16 4.76	1.9521	10 20 49.3	8.188
11	22 18 1.86	1.9513	10 12 36.6	8.235
12	22 19 58.92	1.9506	10 4 21.2	8.282
13	22 21 55.94	1.9499	9 56 2.9	8.328
14	22 23 52.91	1.9493	9 47 41.8	8.374
15	22 25 49.85	1.9487	9 39 18.0	8.420
16	22 27 46.75	1.9481	9 30 51.4	8.465
17	22 29 43.62	1.9475	9 22 22.2	8.509
18	22 31 40.45	1.9470	9 13 50.3	8.553
19	22 33 37.25	1.9465	9 5 15.8	8.597
20	22 35 34.03	1.9460	8 56 38.7	8.640
21	22 37 30.78	1.9456	8 47 59.0	8.683
22	22 39 27.50	1.9452	8 39 16.8	8.725
23	22 41 24.20	1.9449	8 30 32.1	8.766
24	22 43 20.88	1.9446	S. 8 21 45.0	8.807

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 43 20.88	1.9446	S. 8 21 45.0	8.807
1	22 45 17.55	1.9443	8 12 55.4	8.847
2	22 47 14.20	1.9440	8 4 3.3	8.887
3	22 49 10.84	1.9438	7 55 8.9	8.926
4	22 51 7.46	1.9437	7 46 12.1	8.965
5	22 53 4.08	1.9436	7 37 13.0	9.003
6	22 55 0.69	1.9435	7 28 11.7	9.041
7	22 56 57.30	1.9435	7 19 8.1	9.079
8	22 58 53.91	1.9436	7 10 2.2	9.116
9	23 0 50.52	1.9436	7 0 54.2	9.152
10	23 2 47.14	1.9437	6 51 44.0	9.188
11	23 4 43.76	1.9438	6 42 31.7	9.223
12	23 6 40.40	1.9440	6 33 17.3	9.258
13	23 8 37.05	1.9443	6 24 0.8	9.293
14	23 10 33.71	1.9446	6 14 42.2	9.326
15	23 12 30.39	1.9448	6 5 21.6	9.359
16	23 14 27.09	1.9452	5 55 59.1	9.392
17	23 16 23.81	1.9456	5 46 34.6	9.424
18	23 18 20.56	1.9460	5 37 8.2	9.456
19	23 20 17.33	1.9464	5 27 39.9	9.487
20	23 22 14.13	1.9469	5 18 9.7	9.518
21	23 24 10.96	1.9475	5 8 37.7	9.548
22	23 26 7.83	1.9482	4 59 4.0	9.578
23	23 28 4.74	1.9489	S. 4 49 28.5	9.607

WEDNESDAY, JANUARY 1, 1868.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 30 1.69	1.9496	S. 4 39 51.3	9.636

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	3	22	20.6
○ Full Moon, . . .	11	0	10.0
☾ Last Quarter, . .	17	15	34.4
● New Moon, . .	25	11	39.0

	d	h
☾ Perigee, ...	12	2.3
☾ Apogee, ...	27	7.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	57° 57′ 17″	3490	59° 17′ 52″	3487	60° 38′ 31″	3482	61° 59′ 15″	3479
	a Pegasi	E.	46 52 47	3661	45 35 8	3679	44 17 59	3709	43 1 22	3743
	a Arietis	E.	88 34 51	3209	87 8 53	3208	85 42 53	3204	84 16 49	3202
	Aldebaran	E.	121 16 11	3077	119 47 33	3073	118 18 51	3070	116 50 5	3067
2	Sun	W.	68 44 14	3450	70 5 34	3443	71 27 2	3435	72 48 39	3428
	a Pegasi	E.	36 48 16	3972	35 36 9	4038	34 25 7	4111	33 15 16	4193
	a Arietis	E.	77 5 36	3184	75 39 8	3180	74 12 35	3176	72 45 57	3171
	Aldebaran	E.	109 25 1	3043	107 55 41	3036	106 26 13	3030	104 56 37	3023
3	Sun	W.	79 39 7	3380	81 1 46	3370	82 24 37	3358	83 47 41	3346
	a Aquilæ	W.	40 49 9	4243	41 56 55	4160	43 5 59	4084	44 16 16	4013
	a Arietis	E.	65 31 18	3145	64 4 3	3139	62 36 41	3133	61 9 12	3129
	Aldebaran	E.	97 26 16	2981	95 55 39	2970	94 24 49	2961	92 53 47	2950
4	Sun	W.	90 46 37	3281	92 11 11	3266	93 36 2	3251	95 1 11	3236
	a Aquilæ	W.	50 23 52	3722	51 40 16	3674	52 57 31	3628	54 15 35	3585
	a Arietis	E.	53 50 13	3102	52 22 6	3099	50 53 55	3095	49 25 39	3091
	Aldebaran	E.	85 15 1	2890	83 42 29	2876	82 9 40	2862	80 36 33	2848
5	Sun	W.	102 11 34	3154	103 38 38	3136	105 6 4	3119	106 33 51	3100
	a Aquilæ	W.	60 57 10	3393	62 19 35	3359	63 42 38	3326	65 6 19	3294
	Fomalhaut	W.	29 58 29	4408	31 3 43	4246	32 11 26	4102	33 21 26	3973
	Jupiter	W.	24 34 51	2830	26 8 40	2812	27 42 52	2795	29 17 27	2776
	a Arietis	E.	42 3 45	3092	40 35 26	3097	39 7 13	3105	37 39 9	3115
	Aldebaran	E.	72 46 14	2772	71 11 10	2756	69 35 44	2739	67 59 56	2722
	Pollux	E.	116 14 56	2861	114 41 47	2842	113 8 14	2824	111 34 17	2806
6	Sun	W.	113 58 27	3006	115 28 32	2986	116 59 2	2967	118 29 56	2948
	a Aquilæ	W.	72 13 44	3148	73 40 55	3121	75 8 39	3095	76 36 55	3069
	Fomalhaut	W.	39 40 11	3489	41 0 47	3416	42 22 45	3349	43 46 0	3288
	Jupiter	W.	37 16 23	2684	38 53 24	2665	40 30 51	2646	42 8 43	2627
	a Pegasi	W.	27 4 17	4449	28 8 54	4244	29 16 39	4063	30 27 17	3904
	Aldebaran	E.	59 55 12	2634	58 17 3	2615	56 38 29	2597	54 59 30	2579
	Pollux	E.	103 38 20	2710	102 1 53	2690	100 25 0	2671	98 47 41	2652
7	Sun	W.	126 10 38	2849	127 44 2	2830	129 17 51	2810	130 52 6	2792
	a Aquilæ	W.	84 5 47	2953	85 36 59	2932	87 8 37	2912	88 40 41	2893
	Fomalhaut	W.	50 59 16	3026	52 28 56	2984	53 59 29	2942	55 30 54	2903
	Jupiter	W.	50 24 36	2530	52 5 7	2512	53 46 4	2492	55 27 29	2473
	a Pegasi	W.	36 55 31	3342	38 18 54	3261	39 43 51	3187	41 10 16	3119
	Aldebaran	E.	46 38 7	2484	44 56 31	2465	43 14 28	2446	41 31 58	2427
	Pollux	E.	90 34 34	2556	88 54 38	2536	87 14 15	2519	85 33 26	2499
8	*a* Aquilæ	W.	96 26 55	2806	98 1 13	2794	99 35 49	2781	101 10 42	2769
	Jupiter	W.	64 1 14	2379	65 45 19	2360	67 29 51	2343	69 14 48	2326
	Fomalhaut	W.	63 19 47	2734	64 55 42	2704	66 32 17	2675	68 9 30	2649
	a Pegasi	W.	48 41 11	2848	50 14 37	2804	51 49 0	2763	53 24 16	2726
	Aldebaran	E.	32 52 48	2334	31 7 38	2316	29 22 2	2298	27 36 0	2281
	Pollux	E.	77 2 56	2410	75 19 35	2393	73 35 50	2376	71 51 41	2360
	Regulus	E.	112 59 31	2335	111 14 22	2317	109 28 47	2299	107 42 46	2283
9	*a* Aquilæ	W.	109 8 18	2733	110 44 14	2732	112 20 12	2731	113 56 11	2731
	Jupiter	W.	78 5 55	2241	79 53 21	2226	81 41 9	2211	83 29 20	2196
	Fomalhaut.	W.	76 24 5	2533	78 4 32	2512	79 45 28	2494	81 26 50	2475

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN	W.	63° 20′ 3″	3473	64° 40′ 57″	3469	66° 1′ 56″	3463	67° 23′ 2″	3457
	α Pegasi	E.	41 45 20	3779	40 29 56	3820	39 15 15	3865	38 1 20	3916
	α Arietis	E.	82 50 42	3198	81 24 31	3196	79 58 17	3193	78 31 59	3188
	Aldebaran	E.	115 21 15	3063	113 52 20	3059	112 23 20	3054	110 54 14	3046
2	SUN	W.	74 10 24	3419	75 32 19	3410	76 54 24	3400	78 16 40	3391
	α Pegasi	E.	32 6 45	4291	30 59 44	4400	29 54 23	4527	28 50 55	4677
	α Arietis	E.	71 19 13	3166	69 52 23	3162	68 25 28	3156	66 58 26	3151
	Aldebaran	E.	103 26 53	3016	101 57 0	3007	100 26 56	2998	98 56 41	2990
3	SUN	W.	85 10 59	3334	86 34 31	3321	87 58 18	3308	89 22 20	3295
	α Aquilæ	W.	45 27 43	3947	46 40 15	3886	47 53 49	3828	49 8 22	3778
	α Arietis	E.	59 41 37	3124	58 13 56	3118	56 46 8	3113	55 18 14	3107
	Aldebaran	E.	91 22 31	2939	89 51 1	2927	88 19 17	2916	86 47 17	2902
4	SUN	W.	96 26 37	3220	97 52 22	3204	99 18 26	3188	100 44 50	3171
	α Aquilæ	W.	55 34 26	3543	56 54 3	3504	58 14 23	3465	59 35 26	3429
	α Arietis	E.	47 57 19	3089	46 28 56	3088	45 0 32	3088	43 32 8	3089
	Aldebaran	E.	79 3 8	2834	77 29 24	2819	75 55 21	2804	74 20 58	2788
5	SUN	W.	108 2 1	3082	109 30 33	3063	110 59 28	3044	112 28 46	3026
	α Aquilæ	W.	66 30 37	3264	67 55 31	3233	69 21 1	3204	70 47 6	3176
	Fomalhaut	W.	34 33 32	3856	35 47 36	3751	37 3 29	3656	38 21 3	3569
	Jupiter	W.	30 52 26	2758	32 27 49	2740	34 3 35	2722	35 39 47	2703
	α Arietis	E.	36 11 18	3130	34 43 45	3148	33 16 34	3172	31 49 51	3203
	Aldebaran	E.	66 23 46	2705	64 47 13	2687	63 10 16	2670	61 32 56	2652
	Pollux	E.	109 59 55	2786	108 25 9	2767	106 49 58	2748	105 14 22	2729
6	SUN	W.	120 1 14	2928	121 32 57	2908	123 5 6	2889	124 37 39	2869
	α Aquilæ	W.	78 5 42	3044	79 35 0	3021	81 4 47	2997	82 35 3	2975
	Fomalhaut	W.	45 10 29	3226	46 36 7	3173	48 2 49	3121	49 30 33	3073
	Jupiter	W.	43 47 1	2608	45 25 45	2588	47 4 56	2569	48 44 33	2550
	α Pegasi	W.	31 40 33	3765	32 56 12	3642	34 14 1	3532	35 33 50	3431
	Aldebaran	E.	53 20 6	2560	51 40 16	2540	49 59 59	2522	48 19 16	2503
	Pollux	E.	97 9 56	2632	95 31 45	2612	93 53 7	2593	92 14 3	2575
7	SUN	W.	132 26 45	2772	134 1 49	2754	135 37 17	2735	137 13 10	2717
	α Aquilæ	W.	90 13 10	2873	91 46 3	2855	93 19 19	2838	94 52 57	2823
	Fomalhaut	W.	57 3 10	2866	58 36 13	2831	60 10 1	2797	61 44 33	2765
	Jupiter	W.	57 9 20	2454	58 51 38	2435	60 34 23	2416	62 17 35	2397
	α Pegasi	W.	42 38 3	3056	44 7 6	2997	45 37 22	2944	47 8 45	2894
	Aldebaran	E.	39 49 2	2408	38 5 39	2389	36 21 48	2371	34 37 31	2353
	Pollux	E.	83 52 11	2480	82 10 30	2462	80 28 24	2445	78 45 53	2426
8	α Aquilæ	W.	102 45 50	2759	104 21 12	2750	105 56 45	2743	107 32 28	2738
	Jupiter	W.	71 0 12	2307	72 46 1	2290	74 32 14	2274	76 18 52	2258
	Fomalhaut	W.	69 47 18	2624	71 25 41	2599	73 4 38	2575	74 44 7	2554
	α Pegasi	W.	55 0 23	2689	56 37 18	2656	58 14 59	2622	59 53 24	2592
	Aldebaran	E.	25 49 32	2264	24 2 39	2246	22 15 20	2230	20 27 37	2214
	Pollux	E.	70 7 9	2344	68 22 14	2330	66 36 58	2315	64 51 21	2302
	Regulus	E.	105 56 20	2264	104 9 28	2247	102 22 11	2231	100 34 29	2214
9	α Aquilæ	W.	115 32 8	2737	117 7 59	2744	118 43 41	2753	120 19 10	2766
	Jupiter	W.	85 17 53	2182	87 6 47	2169	88 56 0	2157	90 45 34	2144
	Fomalhaut	W.	83 8 37	2460	84 50 47	2445	86 33 18	2431	88 16 9	2418

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	*a* Pegasi	W.	61° 32′ 30″	2564	63° 12′ 15″	2537	64° 52′ 37″	2512	66° 33′ 34″	2486
	Pollux	E.	63 5 24	2289	61 19 8	2277	59 32 34	2266	57 45 44	2256
	Regulus	E.	98 46 22	2198	96 57 52	2183	95 8 59	2169	93 19 44	2154
10	Jupiter	W.	92 35 26	2133	94 25 35	2122	96 16 1	2111	98 6 43	2100
	Fomalhaut	W.	89 59 18	2406	91 42 44	2396	93 26 25	2387	95 10 19	2379
	a Pegasi	W.	75 5 59	2391	76 49 47	2375	78 33 57	2362	80 18 27	2346
	a Arietis	W.	31 44 14	2591	33 23 22	2533	35 3 49	2483	36 45 26	2439
	Pollux	E.	48 48 14	2220	47 0 17	2217	45 12 15	2216	43 24 12	2217
	Regulus	E.	84 8 18	2090	82 17 4	2079	80 25 33	2069	78 33 46	2060
11	Jupiter	W.	107 23 31	2064	109 15 25	2059	111 7 27	2055	112 59 37	2051
	Fomalhaut	W.	103 51 57	2361	105 36 28	2362	107 20 58	2364	109 5 24	2366
	a Pegasi	W.	89 5 2	2304	90 50 56	2298	92 36 58	2295	94 23 5	2293
	a Arietis	W.	45 27 2	2284	47 13 25	2264	49 0 18	2245	50 47 38	2229
	Pollux	E.	34 25 30	2264	32 38 37	2285	30 52 15	2311	29 6 31	2343
	Regulus	E.	69 11 30	2022	67 18 30	2017	65 25 22	2012	63 32 7	2008
	Spica	E.	122 41 49	2048	120 49 29	2042	118 57 0	2036	117 4 22	2032
12	*a* Pegasi	W.	103 13 51	2302	104 59 48	2308	106 45 36	2315	108 31 13	2325
	a Arietis	W.	59 49 22	2176	61 38 25	2172	63 27 35	2168	65 16 51	2164
	Aldebaran	W.	26 3 37	2000	27 57 12	2000	29 50 46	2001	31 44 18	2003
	Regulus	E.	54 4 43	2000	52 11 9	2002	50 17 38	2003	48 24 9	2006
	Spica	E.	107 39 49	2021	105 46 47	2021	103 53 45	2022	102 0 45	2024
13	*a* Arietis	W.	74 23 42	2169	76 12 57	2172	78 2 6	2178	79 51 7	2184
	Aldebaran	W.	41 10 49	2025	43 3 45	2032	44 56 30	2038	46 49 5	2046
	Regulus	E.	38 57 56	2028	37 5 5	2034	35 12 24	2041	33 19 54	2050
	Spica	E.	92 36 53	2044	90 44 28	2051	88 52 13	2058	87 0 9	2065
14	*a* Arietis	W.	88 53 30	2237	90 41 18	2238	92 28 49	2250	94 16 2	2262
	Aldebaran	W.	56 8 45	2092	57 59 57	2103	59 50 51	2115	61 41 28	2126
	Pollux	W.	15 55 6	3173	17 21 47	2988	18 52 15	2845	20 25 45	2737
	Spica	E.	77 43 5	2114	75 52 27	2125	74 2 6	2137	72 12 3	2149
	Saturn	E.	115 29 55	2133	113 39 46	2143	111 49 52	2155	110 0 18	2167
	Sun	E.	137 48 11	2436	136 5 27	2446	134 22 58	2457	132 40 44	2468
15	*a* Arietis	W.	103 7 12	2335	104 52 20	2351	106 37 5	2368	108 21 25	2381
	Aldebaran	W.	70 49 50	2192	72 38 30	2205	74 26 50	2220	76 14 48	2235
	Pollux	W.	28 38 30	2500	30 19 43	2484	32 1 19	2472	33 43 12	2463
	Spica	E.	63 6 40	2217	61 18 38	2233	59 30 59	2248	57 43 43	2262
	Saturn	E.	100 57 2	2232	99 9 22	2246	97 22 3	2260	95 35 5	2276
	Sun	E.	124 13 44	2532	122 33 15	2546	120 53 6	2561	119 13 17	2575
16	Aldebaran	W.	85 9 10	2309	86 54 56	2325	88 40 19	2341	90 25 19	2356
	Pollux	W.	42 14 5	2465	43 56 8	2471	45 38 2	2478	47 19 46	2486
	Spica	E.	48 53 13	2346	47 8 21	2364	45 23 55	2382	43 39 54	2401
	Saturn	E.	86 45 44	2351	85 0 59	2366	83 16 36	2382	81 32 35	2397
	Sun	E.	110 59 24	2664	109 21 42	2670	107 44 22	2687	106 7 24	2703
17	Aldebaran	W.	99 4 45	2434	100 47 31	2450	102 29 55	2465	104 11 58	2480
	Pollux	W.	55 45 18	2537	57 25 40	2548	59 5 46	2561	60 45 35	2572
	Regulus	W.	19 0 0	2444	20 42 32	2458	22 24 44	2472	24 6 36	2487
	Spica	E.	35 6 37	2499	33 25 23	2520	31 44 38	2543	30 4 24	2566
	Saturn	E.	72 58 9	2477	71 16 23	2492	69 34 59	2507	67 53 55	2524

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
9	α Pegasi	W.	68° 15′ 4″	2466	69° 57′ 5″	2445	71° 39′ 36″	2425	73° 22′ 35″	2408
	Pollux	E.	55 58 39	2246	54 11 20	2237	52 23 47	2230	50 36 4	2225
	Regulus	E.	91 30 8	2140	89 40 10	2127	87 49 52	2114	85 59 14	2102
10	Jupiter	W.	99 57 39	2093	101 48 49	2085	103 40 12	2077	105 31 46	2070
	Fomalhaut	W.	96 54 24	2372	98 38 38	2367	100 23 0	2364	102 7 27	2362
	α Pegasi	W.	82 3 16	2337	83 48 22	2326	85 33 43	2317	87 19 17	2310
	α Arietis	W.	38 28 5	2400	40 11 40	2365	41 56 5	2336	43 41 14	2308
	Pollux	E.	41 36 10	2220	39 48 13	2226	38 0 24	2235	36 12 48	2247
	Regulus	E.	76 41 44	2050	74 49 28	2042	72 57 0	2036	71 4 20	2028
11	Jupiter	W.	114 51 52	2048	116 44 11	2046	118 36 34	2044	120 29 0	2043
	Fomalhaut	W.	110 49 44	2375	112 33 55	2380	114 17 55	2392	116 1 41	2404
	α Pegasi	W.	96 9 15	2291	97 55 27	2292	99 41 38	2294	101 27 47	2297
	α Arietis	W.	52 35 23	2214	54 23 29	2203	56 11 52	2193	58 0 30	2184
	Pollux	E.	27 21 34	2384	25 37 37	2438	23 54 57	2510	22 13 58	2606
	Regulus	E.	61 38 45	2005	59 45 19	2003	57 51 49	2001	55 58 17	2000
	Spica	E.	115 11 37	2028	113 18 46	2025	111 25 50	2022	109 32 50	2021
12	α Pegasi	W.	110 16 36	2336	112 1 43	2348	113 46 32	2362	115 31 1	2379
	α Arietis	W.	67 6 13	2163	68 55 37	2163	70 45 0	2164	72 34 22	2165
	Aldebaran	W.	33 37 48	2006	35 31 13	2010	37 24 32	2014	39 17 44	2019
	Regulus	E.	46 30 42	2008	44 37 20	2012	42 44 5	2017	40 50 57	2021
	Spica	E.	100 7 48	2026	98 14 55	2030	96 22 8	2034	94 29 27	2039
13	α Arietis	W.	81 39 59	2191	83 28 40	2198	85 17 10	2207	87 5 27	2216
	Aldebaran	W.	48 41 28	2054	50 33 38	2062	52 25 35	2072	54 17 17	2081
	Regulus	E.	31 27 37	2058	29 35 33	2068	27 43 44	2078	25 52 11	2088
	Spica	E.	85 8 16	2074	83 16 37	2083	81 25 11	2092	79 34 0	2103
14	α Arietis	W.	96 2 57	2276	97 49 32	2289	99 35 47	2304	101 21 41	2320
	Aldebaran	W.	63 31 47	2139	65 21 47	2151	67 11 28	2166	69 0 49	2178
	Pollux	W.	22 1 36	2660	23 39 10	2604	25 18 0	2569	26 57 51	2525
	Spica	E.	70 22 18	2162	68 32 53	2175	66 43 48	2188	64 55 3	2203
	Saturn	E.	108 11 1	2179	106 22 2	2192	104 33 22	2205	102 45 2	2218
	Sun	E.	130 58 46	2480	129 17 4	2492	127 35 39	2504	125 54 32	2518
15	α Arietis	W.	110 5 19	2406	111 48 47	2424	113 31 48	2443	115 14 22	2463
	Aldebaran	W.	78 2 24	2249	79 49 38	2264	81 36 31	2279	83 23 2	2294
	Pollux	W.	35 25 17	2458	37 7 29	2457	38 49 43	2458	40 31 56	2460
	Spica	E.	55 56 49	2279	54 10 19	2296	52 24 12	2312	50 38 30	2329
	Saturn	E.	93 48 29	2290	92 2 15	2304	90 16 22	2320	88 30 52	2336
	Sun	E.	117 33 48	2591	115 54 40	2606	114 15 53	2622	112 37 28	2638
16	Aldebaran	W.	92 9 57	2371	93 54 13	2387	95 38 6	2403	97 21 37	2419
	Pollux	W.	49 1 19	2494	50 42 40	2504	52 23 47	2515	54 4 40	2526
	Spica	E.	41 56 20	2419	40 13 13	2438	38 30 33	2458	36 48 21	2478
	Saturn	E.	79 48 56	2414	78 5 41	2429	76 22 48	2445	74 40 17	2461
	Sun	E.	104 30 48	2719	102 54 34	2731	101 18 43	2753	99 43 13	2769
17	Aldebaran	W.	105 53 39	2495	107 34 59	2510	109 15 58	2525	110 56 36	2540
	Pollux	W.	62 25 8	2585	64 4 24	2597	65 43 23	2610	67 22 5	2623
	Regulus	W.	25 48 7	2502	27 29 18	2515	29 10 10	2530	30 50 42	2544
	Spica	E.	28 24 43	2591	26 45 36	2619	25 7 7	2649	23 29 18	2681
	Saturn	E.	66 13 15	2539	64 32 56	2554	62 52 58	2569	61 13 21	2585

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Sun	E.	98° 8′ 5″	2786	96° 33′ 19″	2802	94° 58′ 54″	2819	93° 24′ 51″	2835
18	Aldebaran	W.	112 36 54	2554	114 16 52	2569	115 56 29	2583	117 35 47	2597
	Pollux	W.	69 0 29	2635	70 38 36	2649	72 16 25	2660	73 53 58	2674
	Regulus	W.	32 30 54	2559	34 10 46	2572	35 50 19	2586	37 29 33	2601
	Saturn	E.	59 34 5	2599	57 55 9	2615	56 16 35	2629	54 38 20	2644
	Sun	E.	85 39 52	2916	84 7 54	2931	82 36 15	2947	81 4 56	2963
19	Pollux	W.	81 57 24	2737	83 33 15	2749	85 8 50	2761	86 44 9	2773
	Regulus	W.	45 41 3	2666	47 18 28	2680	48 55 35	2692	50 32 26	2704
	Saturn	E.	46 31 55	2714	44 55 34	2728	43 19 31	2741	41 43 45	2755
	Sun	E.	73 33 5	3036	72 3 37	3050	70 34 26	3065	69 5 33	3078
20	Pollux	W.	94 36 50	2831	96 10 37	2843	97 44 9	2854	99 17 27	2866
	Regulus	W.	58 32 42	2761	60 8 1	2772	61 43 5	2783	63 17 55	2793
	Saturn	E.	33 49 20	2819	32 15 17	2834	30 41 33	2846	29 8 4	2859
	Sun	E.	61 45 10	3143	60 17 52	3155	58 50 49	3168	57 24 1	3179
21	Pollux	W.	107 0 27	2919	108 32 22	2928	110 4 5	2939	111 35 34	2949
	Regulus	W.	71 8 50	2842	72 42 24	2851	74 15 46	2859	75 48 57	2868
	Spica	W.	18 17 41	3040	19 47 4	3022	21 16 50	3007	22 46 54	2997
	Sun	E.	50 13 27	3236	48 48 0	3247	47 22 46	3257	45 57 44	3268
22	Regulus	W.	83 32 14	2907	85 4 24	2915	86 36 24	2921	88 8 16	2926
	Spica	W.	30 19 6	2984	31 49 39	2984	33 20 11	2986	34 50 41	2988
	Sun	E.	38 55 39	3319	37 31 50	3330	36 8 13	3340	34 44 48	3350
23	Regulus	W.	95 45 27	2960	97 16 30	2966	98 47 25	2972	100 18 13	2977
	Spica	W.	42 22 24	3003	43 52 33	3007	45 22 37	3010	46 52 37	3014
	Sun	E.	27 50 45	3407	26 28 36	3421	25 6 43	3434	23 45 5	3450
28	Sun	W.	27 21 29	3530	28 41 20	3525	30 1 17	3520	31 21 19	3515
	Jupiter	E.	30 48 3	3148	29 20 51	3148	27 53 39	3147	26 26 26	3146
	Fomalhaut	E.	36 41 13	4132	35 31 42	4212	34 23 27	4301	33 16 35	4401
	a Pegasi	E.	49 47 48	3610	48 29 24	3634	47 11 26	3660	45 53 56	3690
	a Arietis	E.	91 44 5	3214	90 18 12	3214	88 52 19	3213	87 26 25	3211
	Aldebaran	E.	124 28 40	3077	123 0 2	3077	121 31 24	3075	120 2 44	3074
29	Sun	W.	38 2 52	3490	39 23 27	3486	40 44 7	3480	42 4 53	3475
	a Aquilæ	W.	31 9 25	5766	31 57 8	5536	32 47 27	5332	33 40 11	5150
	a Pegasi	E.	39 35 15	3886	38 21 41	3938	37 9 0	3998	35 57 18	4066
	a Arietis	E.	80 16 37	3207	78 50 36	3206	77 24 33	3204	75 58 28	3203
	Aldebaran	E.	112 38 58	3066	111 10 5	3063	109 41 9	3059	108 12 9	3056
30	Sun	W.	48 50 17	3446	50 11 43	3438	51 33 16	3431	52 54 57	3424
	a Aquilæ	W.	38 34 21	4494	39 38 18	4398	40 43 41	4311	41 50 23	4231
	Venus	W.	25 24 13	3688	26 43 0	3676	28 2 0	3664	29 21 14	3653
	a Arietis	E.	68 47 40	3194	67 21 24	3193	65 55 7	3191	64 28 47	3190
	Aldebaran	E.	100 46 0	3034	99 16 30	3029	97 46 53	3023	96 17 9	3017
31	Sun	W.	59 45 34	3383	61 8 11	3372	62 30 59	3362	63 53 58	3352
	a Aquilæ	W.	47 41 2	3915	48 54 7	3864	50 8 3	3817	51 22 48	3771
	Venus	W.	36 0 34	3495	37 21 4	3482	38 41 48	3471	40 2 44	3460
	a Arietis	E.	57 16 38	3182	55 50 8	3181	54 23 36	3180	52 57 3	3181
	Aldebaran	E.	88 46 27	2981	87 15 51	2973	85 45 5	2966	84 14 8	2958

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Sun	E.	91° 51′ 9″	2852	90° 17′ 49″	2868	88° 44′ 49″	2884	87° 12′ 10″	2901
18	Aldebaran	W.	119 14 46	2611	120 53 26	2625	122 31 47	2638	124 9 50	2652
	Pollux	W.	75 31 13	2687	77 8 11	2699	78 44 52	2712	80 21 16	2724
	Regulus	W.	39 8 27	2614	40 47 3	2627	42 25 21	2640	44 3 21	2654
	Saturn	E.	53 0 25	2658	51 22 49	2672	49 45 32	2687	48 8 34	2701
	Sun	E.	79 33 57	2977	78 3 16	2993	76 32 54	3008	75 2 51	3022
19	Pollux	W.	88 19 12	2786	89 53 59	2797	91 28 31	2808	93 2 48	2820
	Regulus	W.	52 9 0	2716	53 45 18	2728	55 21 21	2739	56 57 9	2750
	Saturn	E.	40 8 18	2768	38 33 8	2780	36 58 14	2794	35 23 38	2808
	Sun	E.	67 36 56	3091	66 8 35	3105	64 40 31	3118	63 12 43	3130
20	Pollux	W.	100 50 30	2876	102 23 20	2887	103 55 56	2898	105 28 18	2908
	Regulus	W.	64 52 32	2804	66 26 55	2813	68 1 6	2823	69 35 4	2832
	Saturn	E.	27 34 52	2872	26 1 57	2887	24 29 21	2900	22 57 2	2915
	Sun	E.	55 57 27	3191	54 31 7	3202	53 5 0	3214	51 39 7	3225
21	Pollux	W.	113 6 50	2960	114 37 53	2969	116 8 44	2980	117 39 22	2991
	Regulus	W.	77 21 57	2876	78 54 47	2884	80 27 26	2892	81 59 55	2900
	Spica	W.	24 17 10	2991	25 47 34	2987	27 18 3	2985	28 48 34	2986
	Sun	E.	44 32 55	3278	43 8 18	3288	41 43 53	3299	40 19 40	3309
22	Regulus	W.	89 39 59	2935	91 11 33	2942	92 42 59	2948	94 14 17	2954
	Spica	W.	36 21 9	2991	37 51 33	2993	39 21 54	2997	40 52 11	3000
	Sun	E.	33 21 34	3361	31 58 33	3372	30 35 44	3383	29 13 8	3394
23	Regulus	W.	101 48 54	2983	103 19 28	2988	104 49 56	2993	106 20 18	2998
	Spica	W.	48 22 32	3018	49 52 22	3022	51 22 8	3025	52 51 50	3029
	Sun	E.	22 23 45	3468	21 2 43	3496	19 42 3	3507	18 21 47	3533
28	Sun	W.	32 41 26	3510	34 1 39	3505	35 21 58	3500	36 42 22	3495
	Jupiter	E.	24 59 12	3145	23 31 58	3144	22 4 42	3143	20 37 25	3143
	Fomalhaut	E.	32 11 15	4515	31 7 36	4645	30 5 50	4793	29 6 8	4962
	α Pegasi	E.	44 36 58	3722	43 20 34	3756	42 4 46	3794	40 49 38	3838
	α Arietis	E.	86 0 29	3210	84 34 32	3210	83 8 35	3209	81 42 37	3208
	Aldebaran	E.	118 34 3	3073	117 5 20	3071	115 36 35	3069	114 7 48	3067
29	Sun	W.	43 25 45	3470	44 46 43	3463	46 7 48	3458	47 28 59	3452
	α Aquilæ	W.	34 35 10	4990	35 32 13	4847	36 31 11	4717	37 31 56	4600
	α Pegasi	E.	34 46 43	4141	33 37 21	4226	32 29 19	4323	31 22 48	4436
	α Arietis	E.	74 32 22	3201	73 6 14	3200	71 40 5	3198	70 13 54	3196
	Aldebaran	E.	106 43 5	3052	105 13 56	3048	103 44 43	3043	102 15 24	3039
30	Sun	W.	54 16 46	3416	55 38 44	3408	57 0 51	3400	58 23 8	3392
	α Aquilæ	W.	42 58 20	4158	44 7 26	4089	45 17 38	4027	46 28 51	3968
	Venus	W.	30 40 40	3540	32 0 20	3529	33 20 12	3517	34 40 17	3506
	α Arietis	E.	63 2 25	3188	61 36 1	3186	60 9 35	3184	58 43 7	3183
	Aldebaran	E.	94 47 17	3011	93 17 18	3004	91 47 10	2997	90 16 53	2989
31	Sun	W.	65 17 9	3342	66 40 32	3331	68 4 8	3319	69 27 57	3307
	α Aquilæ	W.	52 38 20	3730	53 54 35	3691	55 11 32	3651	56 29 11	3616
	Venus	W.	41 23 54	3446	42 45 18	3434	44 6 56	3422	45 28 48	3409
	α Arietis	E.	51 30 31	3181	50 3 59	3182	48 37 28	3183	47 10 59	3187
	Aldebaran	E.	82 42 59	2946	81 11 39	2936	79 40 6	2927	78 8 21	2916

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 43 54.49	0·324	−17 38 34.7	13·96	21 57.8
2	16 44 7.13	0·726	17 33 24.8	11·86	21 54.2
3	16 44 29.36	1·123	17 29 5.1	9·82	21 50.8
4	16 45 1.01	1·509	17 25 33.6	7·85	21 47.5
5	16 45 41.83	1·887	17 22 47.9	5·99	21 44.4
6	16 46 31.57	2·253	17 20 46.0	4·20	21 41.4
7	16 47 29.98	2·610	17 19 26.3	2·48	21 38.6
8	16 48 36.85	2·958	17 18 47.0	+0·84	21 35.9
9	16 49 51.94	3·294	17 18 45.8	−0·69	21 33.2
10	16 51 15.00	3·622	17 19 20.1	2·12	21 30.9
11	16 52 45.79	3·939	17 20 27.5	3·45	21 28.6
12	16 54 24.07	4·246	17 22 5.9	4·69	21 26.5
13	16 56 9.60	4·543	17 24 12.8	5·83	21 24.4
14	16 58 2.15	4·831	17 26 46.1	6·89	21 22.4
15	17 0 1.48	5·108	17 29 43.7	7·86	21 20.5
16	17 2 7.38	5·378	17 33 3.4	8·73	21 18.7
17	17 4 19.64	5·639	17 36 42.7	9·50	21 17.1
18	17 6 38.07	5·898	17 40 39.6	10·19	21 15.6
19	17 9 2.48	6·138	17 44 51.9	10·79	21 14.2
20	17 11 32.69	6·375	17 49 17.8	11·31	21 12.8
21	17 14 8.50	6·605	17 53 55.0	11·75	21 11.5
22	17 16 49.72	6·826	17 58 41.7	12·16	21 10.4
23	17 19 36.16	7·039	18 3 35.9	12·37	21 9.3
24	17 22 27.63	7·246	18 8 35.8	12·57	21 8.3
25	17 25 23.99	7·446	18 13 39.3	12·69	21 7.3
26	17 28 25.05	7·638	18 18 44.9	12·71	21 6.5
27	17 31 30.63	7·822	18 23 50.8	12·69	21 5.7
28	17 34 40.58	8·002	18 28 55.2	12·62	21 5.0
29	17 37 54.73	8·174	18 33 56.9	12·48	21 4.3
30	17 41 12.94	8·340	18 38 54.2	12·26	21 3.7
31	17 44 35.06	8·500	18 43 45.2	11·97	21 3.2
32	17 48 0.95	8·650	−18 48 28.7	11·63	21 2.7

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 48 0.95	8·650	−18 48 28.7	11·63	21 2.7
2	17 51 30.44	8·801	18 53 3.3	11·23	21 2.3
3	17 55 3.41	8·943	18 57 27.7	10·76	21 2.0
4	17 58 39.71	9·079	19 1 40.8	10·28	21 1.7
5	18 2 19.22	9·210	19 5 41.1	9·72	21 1.5
6	18 6 1.80	9·336	19 9 27.4	9·11	21 1.3
7	18 9 47.34	9·457	19 12 58.6	8·46	21 1.2
8	18 13 35.74	9·574	19 16 13.7	7·77	21 1.0
9	18 17 26.88	9·686	19 19 11.6	7·03	21 1.0
10	18 21 20.67	9·794	19 21 51.3	6·25	21 1.0
11	18 25 17.01	9·898	19 24 11.8	5·43	21 1.0
12	18 29 15.78	9·997	19 26 12.2	4·58	21 1.1
13	18 33 16.89	10·093	19 27 51.8	3·69	21 1.2
14	18 37 20.22	10·183	19 29 9.5	2·76	21 1.3
15	18 41 25.69	10·271	19 30 4.5	1·80	21 1.5
16	18 45 33.22	10·355	19 30 36.1	−0·82	21 1.7
17	18 49 42.72	10·435	19 30 43.8	+0·18	21 1.9
18	18 53 54.10	10·512	19 30 26.8	1·23	21 2.2
19	18 58 7.28	10·583	19 29 44.5	2·30	21 2.5
20	19 2 22.18	10·654	19 28 36.2	3·39	21 2.9
21	19 6 38.70	10·720	19 27 1.4	4·51	21 3.2
22	19 10 56.76	10·783	19 24 59.6	5·64	21 3.6
23	19 15 16.27	10·841	19 22 30.5	6·79	21 4.0
24	19 19 37.14	10·896	19 19 33.5	7·96	21 4.4
25	19 23 59.29	10·948	19 16 8.3	9·15	21 4.8
26	19 28 22.64	10·996	19 12 14.4	10·35	21 5.3
27	19 32 47.10	11·041	19 7 51.6	11·55	21 5.8
28	19 37 12.61	11·083	19 2 59.9	12·77	21 6.3
29	19 41 39.08	11·121	18 57 38.8	13·99	21 6.8
30	19 46 6.43	11·156	18 51 48.1	15·23	21 7.3
31	19 50 34.57	11·187	18 45 27.7	16·47	21 7.9
32	19 55 3.42	11·215	−18 38 37.4	17·71	21 8.5

Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	26.4	24.3	22.4	20.6	19.0	17.6	16.3
Hor. Par.	26.6	24.5	22.5	20.7	19.1	17.7	16.5

Day of the Month,	5th.	10th.	15th.	20th.	25th.
	″	″	″	″	″
Semidiameter	15.2	14.3	13.4	12.6	12.0
Horizontal Parallax	15.4	14.4	13.5	12.7	12.0

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 41 39.08	11.121	−18 57 38.8	13.99	21 6.8
2	19 46 6.43	11.156	18 51 48.1	15.23	21 7.3
3	19 50 34.57	11.187	18 45 27.7	16.47	21 7.9
4	19 55 3.42	11.215	18 38 37.4	17.71	21 8.5
5	19 59 32.92	11.241	18 31 17.4	18.96	21 9.1
6	20 4 3.01	11.263	18 23 27.3	20.20	21 9.8
7	20 8 33.62	11.284	18 15 7.2	21.46	21 10.4
8	20 13 4.63	11.302	18 6 17.2	22.70	21 11.1
9	20 17 36.13	11.317	17 56 57.4	23.95	21 11.7
10	20 22 7.91	11.330	17 47 7.7	25.22	21 12.3
11	20 26 39.97	11.340	17 36 48.2	26.43	21 12.9
12	20 31 12.26	11.349	17 25 59.1	27.66	21 13.5
13	20 35 44.73	11.356	17 14 40.5	28.89	21 14.1
14	20 40 17.33	11.360	17 2 52.5	30.10	21 14.7
15	20 44 50.03	11.363	16 50 35.4	31.31	21 15.3
16	20 49 22.77	11.364	16 37 49.4	32.51	21 15.9
17	20 53 55.52	11.364	16 24 34.8	33.70	21 16.5
18	20 58 28.26	11.363	16 10 51.7	34.88	21 17.1
19	21 3 0.94	11.360	15 56 40.4	36.05	21 17.7
20	21 7 33.53	11.356	15 42 1.3	37.21	21 18.3
21	21 12 6.01	11.351	15 26 54.5	38.35	21 18.9
22	21 16 38.36	11.344	15 11 20.5	39.47	21 19.5
23	21 21 10.53	11.336	14 55 19.8	40.58	21 20.1
24	21 25 42.50	11.327	14 38 52.7	41.67	21 20.7
25	21 30 14.24	11.317	14 21 59.5	42.75	21 21.2
26	21 34 45.74	11.307	14 4 40.6	43.81	21 21.8
27	21 39 16.96	11.295	13 46 56.5	44.85	21 22.3
28	21 43 47.88	11.282	13 28 47.9	45.86	21 22.8
29	21 48 18.48	11.269	13 10 15.2	46.85	21 23.2
30	21 52 48.77	11.256	12 51 18.9	47.83	21 23.7
31	21 57 17.71	11.240	12 31 59.3	48.79	21 24.2
32	22 1 48.29	11.225	−12 12 16.9	49.73	21 24.8

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 1 48.29	11.225	−12 12 16.9	49.73	21 24.8
2	22 6 17.49	11.209	11 52 12.3	50.64	21 25.3
3	22 10 46.33	11.192	11 31 46.1	51.56	21 25.9
4	22 15 14.79	11.176	11 10 58.9	52.39	21 26.4
5	22 19 42.84	11.160	10 49 51.2	53.23	21 26.9
6	22 24 10.48	11.143	10 28 23.7	54.06	21 27.4
7	22 28 37.73	11.126	10 6 36.8	54.86	21 27.9
8	22 33 4.58	11.110	9 44 31.0	55.63	21 28.4
9	22 37 31.05	11.095	9 22 7.0	56.37	21 28.9
10	22 41 57.14	11.079	8 59 25.4	57.09	21 29.3
11	22 46 22.86	11.064	8 36 26.7	57.79	21 29.8
12	22 50 48.22	11.049	8 13 11.4	58.47	21 30.3
13	22 55 13.22	11.034	7 49 40.2	59.11	21 30.8
14	22 59 37.88	11.020	7 25 53.9	59.73	21 31.2
15	23 4 2.22	11.008	7 1 53.0	60.33	21 31.7
16	23 8 26.26	10.996	6 37 37.8	60.92	21 32.2
17	23 12 50.03	10.985	6 13 9.0	61.47	21 32.6
18	23 17 13.54	10.974	5 48 27.3	61.99	21 33.0
19	23 21 36.80	10.964	5 23 33.4	62.49	21 33.5
20	23 25 59.84	10.956	4 58 27.7	62.97	21 33.9
21	23 30 22.68	10.948	4 33 10.8	63.42	21 34.4
22	23 34 45.36	10.942	4 7 43.4	63.85	21 34.8
23	23 39 7.90	10.936	3 42 6.2	64.24	21 35.2
24	23 43 30.30	10.931	3 16 19.9	64.61	21 35.6
25	23 47 52.61	10.927	2 50 25.0	64.95	21 36.1
26	23 52 14.83	10.924	2 24 22.0	65.27	21 36.5
27	23 56 37.00	10.922	1 58 11.7	65.57	21 37.0
28	0 0 59.13	10.921	1 31 54.8	65.83	21 37.4
29	0 5 21.24	10.921	1 5 32.0	66.06	21 37.8
30	0 9 43.38	10.921	0 39 3.9	66.27	21 38.2
31	0 14 5.54	10.924	−0 12 31.1	66.45	21 38.7
32	0 18 27.76	10.928	+0 14 5.8	66.61	21 39.1

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	11.3	10.8	10.3	9.8	9.4	9.1
Hor. Parallax	11.4	10.9	10.4	9.9	9.5	9.1

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter	8.7	8.4	8.1	7.8	7.5	7.4
Hor. Parallax	8.8	8.5	8.2	7.9	7.6	7.4

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	0 14 5.54	10·924	− 0 12 31.1	66·45	21 38.7
2	0 18 27.76	10·928	+ 0 14 5.8	66·61	21 39.1
3	0 22 50.10	10·933	0 40 46.0	66·73	21 39.6
4	0 27 12.55	10·938	1 7 28.0	66·83	21 40.0
5	0 31 35.14	10·945	1 34 13.9	66·90	21 40.5
6	0 35 57.90	10·953	2 1 0.3	66·95	21 40.9
7	0 40 20.87	10·962	2 27 47.3	66·96	21 41.3
8	0 44 44.08	10·973	2 54 34.4	66·95	21 41.7
9	0 49 7.55	10·984	3 21 21.2	66·93	21 42.2
10	0 53 31.31	10·997	3 48 6.9	66·86	21 42.6
11	0 57 55.39	11·011	4 14 50.7	66·75	21 43.1
12	1 2 19.82	11·027	4 41 31.3	66·63	21 43.6
13	1 6 44.67	11·044	5 8 8.7	66·48	21 44.1
14	1 11 9.95	11·063	5 34 42.4	66·31	21 44.6
15	1 15 35.70	11·083	6 1 11.7	66·11	21 45.1
16	1 20 1.93	11·104	6 27 36.0	65·89	21 45.6
17	1 24 28.70	11·127	6 53 54.3	65·63	21 46.1
18	1 28 56.03	11·149	7 20 6.1	65·35	21 46.6
19	1 33 23.96	11·176	7 46 10.9	65·04	21 47.1
20	1 37 52.51	11·203	8 12 7.9	64·70	21 47.6
21	1 42 21.74	11·232	8 37 56.4	64·33	21 48.2
22	1 46 51.66	11·261	9 3 35.7	63·93	21 48.8
23	1 51 22.30	11·292	9 29 5.1	63·50	21 49.4
24	1 55 53.67	11·324	9 54 23.9	63·05	21 50.0
25	2 0 25.85	11·357	10 19 31.5	62·57	21 50.6
26	2 4 58.83	11·391	10 44 27.3	62·06	21 51.2
27	2 9 32.65	11·427	11 9 10.6	61·53	21 51.8
28	2 14 7.34	11·464	11 33 40.6	60·95	21 52.4
29	2 18 42.91	11·501	11 57 56.4	60·35	21 53.1
30	2 23 19.37	11·538	12 21 57.4	59·72	21 53.8
31	2 27 56.76	11·577	12 45 43.1	59·07	21 54.5
32	2 32 35.08	11·616	+13 9 12.7	58·38	21 55.2

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	2 32 35.08	11·616	+13 9 12.7	58·38	21 55.2
2	2 37 14.35	11·656	13 32 25.5	57·66	21 56.0
3	2 41 54.59	11·697	13 55 20.6	56·91	21 56.7
4	2 46 35.82	11·739	14 17 57.4	56·14	21 57.5
5	2 51 18.07	11·782	14 40 15.3	55·33	21 58.3
6	2 56 1.34	11·826	15 2 13.5	54·49	21 59.1
7	3 0 45.66	11·869	15 23 51.2	53·62	21 59.9
8	3 5 31.04	11·913	15 45 8.0	52·74	22 0.7
9	3 10 17.48	11·957	16 6 3.1	51·82	22 1.5
10	3 15 5.01	12·003	16 26 35.6	50·87	22 2.4
11	3 19 53.63	12·049	16 46 44.9	49·90	22 3.3
12	3 24 43.35	12·095	17 6 30.4	48·88	22 4.2
13	3 29 34.17	12·141	17 25 51.5	47·85	22 5.1
14	3 34 26.11	12·187	17 44 47.4	46·79	22 6.1
15	3 39 19.18	12·234	18 3 17.3	45·69	22 7.0
16	3 44 13.37	12·282	18 21 20.6	44·57	22 8.0
17	3 49 8.70	12·328	18 38 56.9	43·42	22 9.0
18	3 54 5.13	12·374	18 56 5.3	42·25	22 10.0
19	3 59 2.66	12·421	19 12 45.2	41·05	22 11.0
20	4 4 1.33	12·468	19 28 55.9	39·62	22 12.1
21	4 9 1.10	12·513	19 44 36.9	38·57	22 13.2
22	4 14 1.98	12·559	19 59 47.5	37·29	22 14.3
23	4 19 3.93	12·603	20 14 27.1	35·99	22 15.4
24	4 24 6.95	12·647	20 28 35.1	34·66	22 16.5
25	4 29 11.00	12·689	20 42 10.8	33·31	22 17.6
26	4 34 16.06	12·732	20 55 13.8	31·93	22 18.8
27	4 39 22.13	12·773	21 7 43.5	30·53	22 19.9
28	4 44 29.16	12·812	21 19 39.1	29·09	22 21.1
29	4 49 37.12	12·851	21 31 0.2	27·63	22 22.3
30	4 54 46.00	12·888	21 41 46.4	26·19	22 23.6
31	4 59 55.75	12·923	21 51 57.2	24·70	22 24.8
32	5 5 6.34	12·958	+22 1 32.0	23·19	22 26.1

Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	7.2	7.0	6.8	6.6	6.5	6.3	6.2
Hor. Par.	7.2	7.0	6.8	6.7	6.5	6.4	6.2

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	6.1	5.9	5.8	5.7	5.6	5.6
Hor. Parallax	6.1	6.0	5.9	5.8	5.7	5.6

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	4 59 55.75	12·923	+21 51 57.2	24·70	22 24.8	1	7 43 8.45	13·069	+21 46 46.4	26·08	23 5.9
2	5 5 6.34	12·956	22 1 32.0	23·19	22 26.1	2	7 48 21.79	13·041	21 36 2.5	27·62	23 7.2
3	5 10 17.73	12·990	22 10 30.3	21·66	22 27.3	3	7 53 34.43	13·011	21 24 40.7	29·19	23 8.4
4	5 15 29.88	13·021	22 18 51.8	20·12	22 28.6	4	7 58 46.33	12·980	21 12 41.4	30·74	23 9.6
5	5 20 42.75	13·050	22 26 36.1	18·56	22 29.9	5	8 3 57.48	12·948	21 0 5.1	32·27	23 10.9
6	5 25 56.28	13·077	22 33 42.8	16·98	22 31.2	6	8 9 7.85	12·914	20 46 52.2	33·79	23 12.1
7	5 31 10.45	13·103	22 40 11.4	15·39	22 32.5	7	8 14 17.38	12·879	20 33 3.1	35·29	23 13.3
8	5 36 25.21	13·126	22 46 1.6	13·78	22 33.8	8	8 19 26.04	12·843	20 18 38.4	36·76	23 14.5
9	5 41 40.51	13·148	22 51 13.1	12·16	22 35.1	9	8 24 33.82	12·805	20 3 38.4	38·22	23 15.7
10	5 46 56.31	13·169	22 55 45.4	10·53	22 36.4	10	8 29 40.69	12·767	19 48 3.7	39·65	23 16.8
11	5 52 12.55	13·186	22 59 38.4	8·89	22 37.7	11	8 34 46.64	12·728	19 31 54.9	41·07	23 18.0
12	5 57 29.21	13·202	23 2 51.8	7·23	22 39.1	12	8 39 51.65	12·689	19 15 12.4	42·46	23 19.1
13	6 2 46.23	13·215	23 5 25.5	5·57	22 40.4	13	8 44 55.69	12·648	18 57 56.8	43·83	23 20.2
14	6 8 3.55	13·226	23 7 19.3	3·90	22 41.8	14	8 49 58.74	12·607	18 40 8.6	45·17	23 21.3
15	6 13 21.09	13·235	23 8 32.9	2·23	22 43.1	15	8 55 0.82	12·565	18 21 48.6	46·48	23 22.4
16	6 18 38.85	13·243	23 9 6.4	+0·56	22 44.5	16	9 0 1.89	12·522	18 2 57.3	47·78	23 23.5
17	6 23 56.76	13·248	23 8 59.7	−1·12	22 45.8	17	9 5 1.96	12·481	17 43 35.1	49·05	23 24.5
18	6 29 14.78	13·252	23 8 12.4	2·82	22 47.2	18	9 10 1.02	12·440	17 23 42.8	50·29	23 25.5
19	6 34 32.84	13·253	23 6 44.4	4·51	22 48.5	19	9 14 59.09	12·399	17 3 21.0	51·51	23 26.5
20	6 39 50.90	13·251	23 4 35.9	6·19	22 49.9	20	9 19 56.15	12·357	16 42 30.3	52·70	23 27.5
21	6 45 8.91	13·248	23 1 47.1	7·88	22 51.2	21	9 24 52.21	12·314	16 21 11.4	53·86	23 28.5
22	6 50 26.80	13·242	22 58 17.7	9·57	22 52.6	22	9 29 47.24	12·273	15 59 24.9	54·99	23 29.4
23	6 55 44.53	13·235	22 54 7.9	11·25	22 53.9	23	9 34 41.29	12·231	15 37 11.6	56·10	23 30.4
24	7 1 2.06	13·226	22 49 17.7	12·93	22 55.3	24	9 39 34.35	12·190	15 14 32.1	57·18	23 31.3
25	7 6 19.32	13·212	22 43 47.4	14·59	22 56.6	25	9 44 26.43	12·149	14 51 27.0	58·23	23 32.2
26	7 11 36.26	13·196	22 37 37.1	16·25	22 58.0	26	9 49 17.52	12·109	14 27 57.1	59·25	23 33.1
27	7 16 52.82	13·182	22 30 47.1	17·91	22 59.3	27	9 54 7.66	12·069	14 4 3.1	60·24	23 34.0
28	7 22 8.98	13·163	22 23 17.2	19·57	23 0.6	28	9 58 56.85	12·029	13 39 45.6	61·20	23 34.9
29	7 27 24.67	13·143	22 15 7.9	21·20	23 1.9	29	10 3 45.08	11·990	13 15 5.4	62·13	23 35.7
30	7 32 39.85	13·121	22 6 19.4	22·83	23 3.3	30	10 8 32.39	11·952	12 50 3.3	63·03	23 36.5
31	7 37 54.46	13·096	21 56 52.1	24·48	23 4.6	31	10 13 18.80	11·915	12 24 39.8	63·91	23 37.4
32	7 43 8.45	13·069	+21 46 46.4	26·08	23 5.9	32	10 18 4.32	11·878	+11 58 55.7	64·75	23 38.2

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	5.5	5.4	5.3	5.3	5.2	5.2
Hor. Parallax	5.5	5.4	5.4	5.3	5.3	5.2

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter	5.1	5.1	5.1	5.0	5.0	5.0
Hor. Parallax	5.2	5.1	5.1	5.1	5.1	5.0

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	10 18 4.32	11.878	+11 58 55.7	64.75	23 38.2
2	10 22 48.98	11.842	11 32 51.7	65.56	23 39.0
3	10 27 32.78	11.808	11 6 28.7	66.34	23 39.8
4	10 32 15.77	11.775	10 39 47.5	67.09	23 40.5
5	10 36 57.97	11.742	10 12 48.4	67.82	23 41.3
6	10 41 39.39	11.710	9 45 32.3	68.51	23 42.0
7	10 46 20.07	11.680	9 18 0.1	69.16	23 42.7
8	10 51 0.04	11.651	8 50 12.4	69.79	23 43.4
9	10 55 39.33	11.623	8 22 9.9	70.39	23 44.1
10	11 0 17.99	11.596	7 53 53.3	70.97	23 44.8
11	11 4 56.04	11.573	7 25 23.4	71.51	23 45.5
12	11 9 33.51	11.550	6 56 40.9	72.02	23 46.1
13	11 14 10.44	11.528	6 27 46.6	72.50	23 46.8
14	11 18 46.87	11.508	5 58 41.1	72.95	23 47.5
15	11 23 22.84	11.490	5 29 25.2	73.37	23 48.1
16	11 27 58.40	11.473	4 59 59.5	73.76	23 48.8
17	11 32 33.57	11.458	4 30 24.8	74.12	23 49.5
18	11 37 8.41	11.445	4 0 41.8	74.45	23 50.1
19	11 41 42.92	11.433	3 30 51.3	74.74	23 50.8
20	11 46 17.18	11.423	3 0 53.9	75.01	23 51.4
21	11 50 51.23	11.414	2 30 50.6	75.25	23 52.0
22	11 55 25.04	11.407	2 0 41.9	75.46	23 52.6
23	11 59 58.75	11.402	1 30 28.6	75.63	23 53.2
24	12 4 32.36	11.399	1 0 11.4	75.78	23 53.8
25	12 9 5.91	11.397	+ 0 29 51.0	75.90	23 54.4
26	12 13 39.45	11.398	− 0 0 31.9	75.99	23 55.0
27	12 18 13.01	11.399	0 30 56.4	76.03	23 55.6
28	12 22 46.61	11.402	1 1 21.6	76.05	23 56.2
29	12 27 20.31	11.407	1 31 46.9	76.04	23 56.8
30	12 31 54.15	11.414	2 2 11.7	76.01	23 57.4
31	12 36 28.17	11.422	2 32 35.2	75.98	23 58.0
32	12 41 2.40	11.432	− 3 2 56.6	75.86	23 58.7

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 36 28.17	11.422	− 2 32 35.2	75.98	23 58.0
2	12 41 2.40	11.432	3 2 56.6	75.86	23 58.7
3	12 45 36.91	11.444	3 33 15.1	75.70	23 59.4
4	12 50 11.73	11.457	4 3 30.0	75.53	
5	12 54 46.87	11.472	4 33 40.5	75.33	0 0.1
6	12 59 22.40	11.489	5 3 45.6	75.09	0 0.7
7	13 3 58.35	11.507	5 33 45.0	74.83	0 1.3
8	13 8 34.76	11.527	6 3 37.7	74.54	0 2.0
9	13 13 11.66	11.549	6 33 23.1	74.22	0 2.6
10	13 17 49.18	11.573	7 3 0.2	73.85	0 3.3
11	13 22 27.18	11.598	7 32 28.2	73.46	0 4.0
12	13 27 5.86	11.625	8 1 46.3	73.04	0 4.7
13	13 31 45.21	11.654	8 30 54.1	72.59	0 5.4
14	13 36 25.26	11.684	8 59 50.7	72.11	0 6.2
15	13 41 6.07	11.717	9 28 35.2	71.60	0 7.0
16	13 45 47.66	11.751	9 57 7.0	71.04	0 7.7
17	13 50 30.10	11.786	10 25 25.1	70.45	0 8.5
18	13 55 13.38	11.822	10 53 28.8	69.84	0 9.2
19	13 59 57.56	11.860	11 21 17.4	69.19	0 10.0
20	14 4 42.67	11.899	11 48 50.1	68.51	0 10.8
21	14 9 28.74	11.941	12 16 6.0	67.79	0 11.6
22	14 14 15.82	11.983	12 43 4.3	67.06	0 12.5
23	14 19 3.92	12.026	13 9 44.2	66.27	0 13.3
24	14 23 53.06	12.069	13 36 5.1	65.46	0 14.2
25	14 28 43.27	12.115	14 2 6.1	64.61	0 15.1
26	14 33 34.59	12.161	14 27 46.3	63.73	0 16.0
27	14 38 27.02	12.209	14 53 4.8	62.81	0 16.9
28	14 43 20.61	12.257	15 18 1.0	61.86	0 17.9
29	14 48 15.35	12.306	15 42 33.9	60.87	0 18.9
30	14 53 11.28	12.355	16 6 42.9	59.84	0 19.9
31	14 58 8.38	12.404	16 30 27.1	58.78	0 20.9
32	15 3 6.68	12.454	−16 53 45.6	57.72	0 21.9

Day of the Month,	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter	5.0	5.0	5.0	5.0	4.9	4.9
Hor. Parallax	5.0	5.0	5.0	5.0	5.0	5.0

Day of the Month,	3d.	8th	13th.	18th.	23th.	28th.
	″	″	″	″	″	″
Semidiameter	5.0	5.0	5.0	5.0	5.0	5.0
Hor. Parallax	5.0	5.0	5.0	5.0	5.0	5.1

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 3 6.68	12.454	−16 53 45.6	57.72	0 21.9
2	15 8 6.19	12.505	17 16 37.6	56.60	0 22.9
3	15 13 6.92	12.556	17 39 2.5	55.45	0 24.0
4	15 18 8.87	12.607	18 0 59.2	54.26	0 25.1
5	15 23 12.06	12.658	18 22 27.2	53.05	0 26.2
6	15 28 16.48	12.709	18 43 25.6	51.80	0 27.3
7	15 33 22.13	12.761	19 3 53.6	50.52	0 28.5
8	15 38 29.01	12.812	19 23 50.5	49.21	0 29.7
9	15 43 37.12	12.863	19 43 15.5	47.86	0 30.9
10	15 48 46.45	12.914	20 2 7.7	46.48	0 32.1
11	15 53 56.99	12.964	20 20 26.5	45.07	0 33.4
12	15 59 8.73	13.014	20 38 11.3	43.64	0 34.6
13	16 4 21.66	13.063	20 55 21.4	42.18	0 35.9
14	16 9 35.78	13.112	21 11 55.9	40.69	0 37.2
15	16 14 51.04	13.159	21 27 54.2	39.16	0 38.5
16	16 20 7.43	13.206	21 43 15.6	37.61	0 39.8
17	16 25 24.92	13.251	21 57 59.5	36.03	0 41.2
18	16 30 43.49	13.296	22 12 5.3	34.43	0 42.5
19	16 36 3.12	13.339	22 25 32.6	32.82	0 43.9
20	16 41 23.76	13.380	22 38 20.6	31.16	0 45.3
21	16 46 45.37	13.419	22 50 28.5	29.49	0 46.7
22	16 52 7.90	13.456	23 1 55.8	27.78	0 48.1
23	16 57 31.34	13.494	23 12 42.0	26.07	0 49.6
24	17 2 55.60	13.527	23 22 47.0	24.33	0 51.1
25	17 8 20.66	13.559	23 32 10.1	22.58	0 52.6
26	17 13 46.46	13.589	23 40 50.7	20.80	0 54.1
27	17 19 12.94	13.616	23 48 48.5	19.01	0 55.6
28	17 24 40.04	13.641	23 56 3.3	17.21	0 57.1
29	17 30 7.70	13.663	24 2 34.4	15.37	0 58.6
30	17 35 35.86	13.683	24 8 21.4	13.54	1 0.1
31	17 41 4.46	13.699	24 13 24.2	11.69	1 1.6
32	17 46 33.43	13.713	−24 17 42.6	9.84	1 3.1

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 41 4.46	13.699	−24 13 24.2	11.69	1 1.6
2	17 46 33.43	13.713	24 17 42.6	9.84	1 3.1
3	17 52 2.70	13.724	24 21 16.4	7.97	1 4.7
4	17 57 32.20	13.733	24 24 5.3	6.10	1 6.2
5	18 3 1.90	13.739	24 26 9.3	4.23	1 7.8
6	18 8 31.71	13.743	24 27 28.2	2.34	1 9.3
7	18 14 1.55	13.743	24 28 1.7	−0.45	1 10.9
8	18 19 31.36	13.740	24 27 49.9	+1.43	1 12.4
9	18 25 1.07	13.734	24 26 52.8	3.32	1 14.0
10	18 30 30.62	13.727	24 25 10.4	5.20	1 15.6
11	18 35 59.95	13.716	24 22 43.0	7.08	1 17.2
12	18 41 28.99	13.702	24 19 30.5	8.96	1 18.7
13	18 46 57.67	13.686	24 15 33.0	10.83	1 20.2
14	18 52 25.93	13.668	24 10 50.7	12.69	1 21.7
15	18 57 53.71	13.648	24 5 23.7	14.55	1 23.3
16	19 3 20.95	13.623	23 59 12.2	16.39	1 24.8
17	19 8 47.59	13.596	23 52 16.8	18.23	1 26.3
18	19 14 13.56	13.568	23 44 37.7	20.04	1 27.8
19	19 19 38.84	13.537	23 36 15.0	21.85	1 29.3
20	19 25 3.33	13.504	23 27 9.1	23.63	1 30.7
21	19 30 27.02	13.469	23 17 20.5	25.41	1 32.2
22	19 35 49.83	13.431	23 6 49.5	27.16	1 33.6
23	19 41 11.71	13.391	22 55 36.8	28.89	1 35.1
24	19 46 32.60	13.349	22 43 42.8	30.60	1 36.5
25	19 51 52.47	13.306	22 31 7.8	32.29	1 37.9
26	19 57 11.28	13.261	22 17 52.5	33.97	1 39.2
27	20 2 28.99	13.214	22 3 57.3	35.61	1 40.6
28	20 7 45.54	13.164	21 49 23.0	37.23	1 41.9
29	20 13 0.90	13.115	21 34 10.2	38.82	1 43.2
30	20 18 15.05	13.063	21 18 19.4	40.39	1 44.5
31	20 23 27.95	13.011	21 1 51.4	41.92	1 45.8
32	20 28 39.57	12.957	−20 44 46.7	43.45	1 47.1

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	5.1	5.1	5.1	5.2	5.2	5.2
Hor. Parallax	5.1	5.1	5.2	5.2	5.2	5.3

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	5.3	5.3	5.4	5.5	5.5	5.6
Hor. Parallax	5.3	5.4	5.4	5.5	5.6	5.6

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 46 34.61	4·003	+25 11 22.7	14·52	13 0.9
2	7 44 57.71	4·078	25 17 8.5	14·30	12 55.3
3	7 43 19.09	4·146	25 22 49.1	14·06	12 49.7
4	7 41 38.93	4·205	25 28 23.9	13·80	12 44.1
5	7 39 57.42	4·256	25 33 51.9	13·50	12 38.5
6	7 38 14.79	4·296	25 39 12.1	13·17	12 32.9
7	7 36 31.30	4·326	25 44 24.0	12·81	12 27.3
8	7 34 47.14	4·348	25 49 26.9	12·42	12 21.7
9	7 33 2.55	4·331	25 54 20.1	12·01	12 16.1
10	7 31 17.76	4·365	25 59 3.0	11·56	12 10.4
11	7 29 33.00	4·360	26 3 34.9	11·09	12 4.8
12	7 27 48.47	4·346	26 7 55.4	10·61	11 59.1
13	7 26 4.39	4·323	26 12 4.2	10·11	11 53.5
14	7 24 20.99	4·290	26 16 1.1	9·61	11 47.8
15	7 22 38.49	4·247	26 19 45.8	9·10	11 42.2
16	7 20 57.10	4·197	26 23 18.1	8·58	11 36.6
17	7 19 17.01	4·139	26 26 37.7	8·05	11 31.0
18	7 17 38.38	4·074	26 29 44.7	7·52	11 25.4
19	7 16 1.41	4·002	26 32 38.9	6·99	11 19.9
20	7 14 26.27	3·923	26 35 20.5	6·46	11 14.4
21	7 12 53.13	3·836	26 37 49.3	5·94	11 8.9
22	7 11 22.15	3·744	26 40 5.5	5·42	11 3.5
23	7 9 53.47	3·544	26 42 9.2	4·91	10 58.1
24	7 8 27.24	3·539	26 44 0.7	4·40	10 52.7
25	7 7 3.60	3·428	26 45 40.1	3·89	10 47.4
26	7 5 42.68	3·312	26 47 7.7	3·40	10 42.1
27	7 4 24.59	3·191	26 48 23.7	2·93	10 36.9
28	7 3 9.45	3·066	26 49 28.3	2·46	10 31.7
29	7 1 57.36	2·936	26 50 21.8	2·00	10 26.6
30	7 0 48.42	2·804	26 51 4.7	1·56	10 21.6
31	6 59 42.70	2·669	26 51 37.3	1·14	10 16.6
32	6 58 40.30	2·530	+26 51 59.9	0·73	10 11.7

Day of the Month,	1st.	9th.	17th.	25th.
	″	″	″	″
Polar Semidiameter	7.9	7.9	7.8	7.6
Horizontal Parallax	13.4	13.5	13.3	12.8

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 58 40.30	2·530	+26 51 59.9	0·73	10 11.7
2	6 57 41.29	2·388	26 52 12.8	0·34	10 6.8
3	6 56 45.71	2·242	26 52 16.3	0·04	10 2.0
4	6 55 53.63	2·095	26 52 10.9	0·41	9 57.2
5	6 55 5.08	1·947	26 51 56.9	0·76	9 52.5
6	6 54 20.10	1·798	26 51 34.6	1·10	9 47.8
7	6 53 38.70	1·649	26 51 4.5	1·42	9 43.2
8	6 53 0.90	1·499	26 50 26.8	1·72	9 38.7
9	6 52 26.69	1·349	26 49 42.0	2·01	9 34.2
10	6 51 56.09	1·198	26 48 50.4	2·28	9 29.8
11	6 51 29.08	1·049	26 47 52.4	2·54	9 25.4
12	6 51 5.65	0·901	26 46 48.4	2·79	9 21.1
13	6 50 45.78	0·754	26 45 38.6	3·03	9 16.8
14	6 50 29.43	0·609	26 44 23.2	3·25	9 12.6
15	6 50 16.55	0·465	26 43 2.4	3·46	9 8.5
16	6 50 7.10	0·323	26 41 36.5	3·67	9 4.5
17	6 50 1.05	0·182	26 40 5.7	3·88	9 0.5
18	6 49 58.36	0·043	26 38 30.2	4·07	8 56.6
19	6 49 58.98	0·094	26 36 50.1	4·26	8 52.7
20	6 50 2.84	0·229	26 35 5.6	4·43	8 48.9
21	6 50 9.92	0·362	26 33 17.0	4·60	8 45.1
22	6 50 20.16	0·493	26 31 24.3	4·77	8 41.4
23	6 50 33.51	0·621	26 29 27.6	4·94	8 37.7
24	6 50 49.92	0·747	26 27 26.9	5·11	8 34.1
25	6 51 9.33	0·871	26 25 22.3	5·27	8 30.5
26	6 51 31.71	0·993	26 23 13.8	5·43	8 27.0
27	6 51 57.00	1·114	26 21 1.6	5·59	8 23.5
28	6 52 25.15	1·232	26 18 45.7	5·75	8 20.0
29	6 52 56.10	1·348	26 16 26.2	5·90	8 16.6
30	6 53 29.82	1·463	26 14 2.9	6·04	8 13.2
31	6 54 6.24	1·575	26 11 35.9	6·19	8 9.9
32	6 54 45.33	1·684	+26 9 5.3	6·34	8 6.6

Day of the Month,	2d.	10th.	18th.	26th.
	″	″	″	″
Polar Semidiameter	7.2	6.7	6.2	5.8
Horizontal Parallax	12.2	11.4	10.6	9.8

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 52 56.10	1.348	+26 16 26.2	5.90	8 16.6
2	6 53 20.82	1.463	26 14 2.9	6.04	8 13.2
3	6 54 6.24	1.575	26 11 35.9	6.19	8 9.9
4	6 54 45.33	1.684	26 9 5.3	6.34	8 6.6
5	6 55 27.02	1.791	26 6 31.2	6.50	8 3.3
6	6 56 11.26	1.896	26 3 53.4	6.65	8 0.1
7	6 56 58.00	1.999	26 1 11.9	6.81	7 56.9
8	6 57 47.19	2.099	25 58 26.6	6.96	7 53.8
9	6 58 38.77	2.198	25 55 37.6	7.12	7 50.7
10	6 59 32.68	2.294	25 52 44.8	7.28	7 47.7
11	7 0 28.87	2.388	25 49 48.2	7.44	7 44.7
12	7 1 27.28	2.480	25 46 47.8	7.60	7 41.8
13	7 2 27.85	2.569	25 43 43.6	7.76	7 38.9
14	7 3 30.52	2.655	25 40 35.4	7.92	7 36.1
15	7 4 35.24	2.739	25 37 23.3	8.09	7 33.3
16	7 5 41.96	2.821	25 34 7.2	8.26	7 30.5
17	7 6 50.62	2.900	25 30 47.0	8.43	7 27.7
18	7 8 1.17	2.978	25 27 22.6	8.60	7 25.0
19	7 9 13.55	3.053	25 23 54.0	8.78	7 22.3
20	7 10 27.71	3.127	25 20 21.0	8.96	7 19.6
21	7 11 43.60	3.198	25 16 43.7	9.15	7 16.9
22	7 13 1.19	3.266	25 13 1.9	9.34	7 14.3
23	7 14 20.42	3.335	25 9 15.5	9.53	7 11.7
24	7 15 41.45	3.401	25 5 24.4	9.72	7 9.1
25	7 17 3.64	3.465	25 1 28.6	9.92	7 6.5
26	7 18 27.56	3.528	24 57 28.0	10.12	7 3.9
27	7 19 52.98	3.590	24 53 22.5	10.33	7 1.4
28	7 21 19.85	3.650	24 49 12.0	10.54	6 58.9
29	7 22 48.14	3.709	24 44 56.5	10.76	6 56.4
30	7 24 17.82	3.766	24 40 35.8	10.97	6 53.9
31	7 25 48.86	3.822	24 36 9.9	11.19	6 51.5
32	7 27 21.21	3.875	+24 31 38.6	11.41	6 49.1

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 27 21.21	3.875	+24 31 38.6	11.41	6 49.1
2	7 28 54.84	3.928	24 27 2.1	11.63	6 46.7
3	7 30 29.72	3.980	24 22 20.1	11.86	6 44.4
4	7 32 5.82	4.030	24 17 32.6	12.10	6 42.1
5	7 33 43.11	4.079	24 12 39.4	12.33	6 39.8
6	7 35 21.55	4.126	24 7 40.7	12.57	6 37.5
7	7 37 1.11	4.172	24 2 36.3	12.81	6 35.2
8	7 38 41.76	4.216	23 57 26.2	13.05	6 33.0
9	7 40 23.46	4.260	23 52 10.3	13.29	6 30.8
10	7 42 6.17	4.301	23 46 48.6	13.53	6 28.6
11	7 43 49.88	4.341	23 41 21.1	13.77	6 26.4
12	7 45 34.54	4.380	23 35 47.7	14.02	6 24.2
13	7 47 20.12	4.418	23 30 8.2	14.27	6 22.0
14	7 49 6.58	4.454	23 24 22.7	14.52	6 19.9
15	7 50 53.92	4.489	23 18 31.2	14.77	6 17.7
16	7 52 42.10	4.523	23 12 33.5	15.03	6 15.6
17	7 54 31.07	4.557	23 6 29.7	15.29	6 13.5
18	7 56 20.80	4.588	23 0 19.7	15.55	6 11.4
19	7 58 11.28	4.620	22 54 3.6	15.81	6 9.3
20	8 0 2.51	4.650	22 47 41.1	16.07	6 7.2
21	8 1 54.45	4.679	22 41 12.2	16.33	6 5.1
22	8 3 47.07	4.707	22 34 37.0	16.60	6 3.0
23	8 5 40.36	4.734	22 27 55.3	16.86	6 0.9
24	8 7 34.30	4.761	22 21 7.4	17.13	5 58.9
25	8 9 28.88	4.787	22 14 13.1	17.40	5 56.9
26	8 11 24.08	4.812	22 7 12.2	17.67	5 54.9
27	8 13 19.87	4.838	22 0 4.7	17.94	5 52.9
28	8 15 16.25	4.862	21 52 50.8	18.21	5 50.9
29	8 17 13.20	4.886	21 45 30.3	18.49	5 48.9
30	8 19 10.70	4.908	21 38 3.2	18.77	5 46.9
31	8 21 8.74	4.930	21 30 29.4	19.04	5 44.9
32	8 23 7.29	4.951	+21 22 49.0	19.32	5 42.9

Day of the Month,	6th.	14th.	22d.	30th.
	″	″	″	″
Polar Semidiameter	5.4	5.0	4.7	4.4
Horizontal Parallax	9.1	8.5	7.9	7.4

Day of the Month,	7th.	15th.	23d.
	″	″	″
Polar Semidiameter,	4.1	3.8	3.6
Horizontal Parallax,	6.9	6.5	6.2

GREENWICH MEAN TIME.

MAY. Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	JUNE. Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	8 21 8.74	4.930	+21 30 29.4	19.04	5 44.9	1	9 25 12.48	5.331	+16 42 0.5	27.38	4 46.8
2	8 23 7.29	4.951	21 22 49.0	19.32	5 42.9	2	9 27 20.50	5.338	16 31 0.3	27.64	4 45.0
3	8 25 6.35	4.972	21 15 2.0	19.60	5 40.9	3	9 29 28.70	5.345	16 19 54.1	27.89	4 43.2
4	8 27 5.90	4.992	21 7 8.4	19.88	5 39.0	4	9 31 37.07	5.352	16 8 41.9	28.14	4 41.4
5	8 29 5.93	5.011	20 59 8.2	20.15	5 37.0	5	9 33 45.61	5.359	15 57 23.7	28.39	4 39.6
6	8 31 6.41	5.030	20 51 1.3	20.43	5 35.1	6	9 35 54.30	5.365	15 45 59.6	28.63	4 37.8
7	8 33 7.33	5.048	20 42 47.8	20.70	5 33.2	7	9 38 3.14	5.371	15 34 29.7	28.87	4 36.0
8	8 35 8.67	5.065	20 34 27.8	20.98	5 31.3	8	9 40 12.10	5.377	15 22 54.0	29.11	4 34.2
9	8 37 10.41	5.081	20 26 1.0	21.25	5 29.4	9	9 42 21.22	5.382	15 11 12.5	29.35	4 32.5
10	8 39 12.55	5.097	20 17 27.8	21.53	5 27.5	10	9 44 30.44	5.387	14 59 25.3	29.59	4 30.7
11	8 41 15.06	5.112	20 8 48.0	21.80	5 25.6	11	9 46 39.78	5.392	14 47 32.4	29.83	4 28.9
12	8 43 17.92	5.127	20 0 1.6	22.07	5 23.7	12	9 48 49.24	5.397	14 35 33.9	30.06	4 27.1
13	8 45 21.12	5.141	19 51 8.7	22.34	5 21.8	13	9 50 58.82	5.401	14 23 29.9	30.29	4 25.4
14	8 47 24.64	5.154	19 42 9.2	22.62	5 19.9	14	9 53 8.52	5.406	14 11 20.4	30.52	4 23.6
15	8 49 28.47	5.167	19 33 3.2	22.89	5 18.0	15	9 55 18.32	5.410	13 59 5.4	30.74	4 21.8
16	8 51 32.61	5.180	19 23 50.7	23.16	5 16.2	16	9 57 28.21	5.414	13 46 45.1	30.97	4 20.0
17	8 53 37.04	5.191	19 14 31.6	23.43	5 14.3	17	9 59 38.21	5.418	13 34 19.4	31.19	4 18.2
18	8 55 41.75	5.202	19 5 6.2	23.69	5 12.5	18	10 1 48.30	5.422	13 21 48.3	31.41	4 16.4
19	8 57 46.72	5.213	18 55 34.3	23.96	5 10.6	19	10 3 58.49	5.426	13 9 12.1	31.63	4 14.6
20	8 59 51.95	5.223	18 45 56.0	24.23	5 8.8	20	10 6 8.78	5.431	12 56 30.6	31.85	4 12.8
21	9 1 57.43	5.234	18 36 11.3	24.50	5 6.9	21	10 8 19.18	5.435	12 43 43.9	32.06	4 11.1
22	9 4 3.15	5.244	18 26 20.1	24.77	5 5.1	22	10 10 29.68	5.439	12 30 52.2	32.27	4 9.3
23	9 6 9.10	5.254	18 16 22.5	25.04	5 3.2	23	10 12 40.28	5.443	12 17 55.5	32.48	4 7.5
24	9 8 15.29	5.264	18 6 18.5	25.30	5 1.4	24	10 14 50.98	5.448	12 4 53.7	32.68	4 5.7
25	9 10 21.70	5.273	17 56 8.1	25.57	4 59.5	25	10 17 1.79	5.452	11 51 46.9	32.88	4 4.0
26	9 12 28.34	5.282	17 45 51.5	25.83	4 57.7	26	10 19 12.70	5.457	11 38 35.3	33.09	4 2.2
27	9 14 35.19	5.291	17 35 28.7	26.09	4 55.9	27	10 21 23.71	5.461	11 25 18.8	33.29	4 0.5
28	9 16 42.25	5.299	17 24 59.6	26.35	4 54.1	28	10 23 34.83	5.466	11 11 57.6	33.49	3 58.7
29	9 18 49.51	5.307	17 14 24.2	26.61	4 52.3	29	10 25 46.07	5.470	10 58 31.6	33.69	3 57.0
30	9 20 56.97	5.315	17 3 42.5	26.87	4 50.4	30	10 27 57.41	5.475	10 45 0.8	33.88	3 55.2
31	9 23 4.63	5.323	16 52 54.6	27.13	4 48.6	31	10 30 8.85	5.479	10 31 25.5	34.07	3 53.5
32	9 25 12.48	5.331	+16 42 0.5	27.38	4 46.8	32	10 32 20.40	5.484	+10 17 45.7	34.26	3 51.8

Day of the Month,	1st.	9th.	17th.	25th.	Day of the Month,	2d.	10th.	18th.	26th.
	″	″	″	″		″	″	″	″
Polar Semidiameter	3.5	3.3	3.1	3.0	Polar Semidiameter	2.9	2.8	2.7	2.6
Horizontal Parallax	5.9	5.6	5.3	5.1	Horizontal Parallax	4.9	4.7	4.6	4.5

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	10 30 8.85	5.479	+10 31 25.5	34.07	3 53.5
2	10 32 20.40	5.484	10 17 45.7	34.26	3 51.8
3	10 34 32.07	5.488	10 4 1.5	34.44	3 50.1
4	10 36 43.85	5.492	9 50 12.7	34.62	3 48.3
5	10 38 55.73	5.497	9 36 19.7	34.80	3 46.6
6	10 41 7.71	5.501	9 22 22.6	34.98	3 44.8
7	10 43 19.79	5.506	9 8 21.3	35.15	3 43.1
8	10 45 31.97	5.510	8 54 15.8	35.32	3 41.3
9	10 47 44.25	5.514	8 40 6.3	35.48	3 39.6
10	10 49 56.64	5.518	8 25 52.8	35.64	3 37.9
11	10 52 9.14	5.523	8 11 35.5	35.80	3 36.2
12	10 54 21.75	5.527	7 57 14.4	35.96	3 34.6
13	10 56 34.46	5.532	7 42 49.6	36.11	3 32.7
14	10 58 47.27	5.536	7 28 21.2	36.26	3 31.0
15	11 1 0.19	5.541	7 13 49.2	36.41	3 29.3
16	11 3 13.23	5.546	6 59 13.6	36.56	3 27.5
17	11 5 26.37	5.551	6 44 34.6	36.70	3 25.8
18	11 7 39.63	5.556	6 29 52.2	36.84	3 24.1
19	11 9 53.02	5.561	6 15 6.6	36.97	3 22.4
20	11 12 6.55	5.566	6 0 17.8	37.11	3 20.7
21	11 14 20.22	5.572	5 45 25.8	37.24	3 19.0
22	11 16 34.02	5.578	5 30 30.7	37.37	3 17.3
23	11 18 47.97	5.584	5 15 32.6	37.49	3 15.6
24	11 21 2.07	5.590	5 0 31.5	37.61	3 13.9
25	11 23 16.32	5.597	4 45 27.4	37.73	3 12.2
26	11 25 30.73	5.604	4 30 20.4	37.85	3 10.5
27	11 27 45.32	5.611	4 15 10.7	37.97	3 8.8
28	11 30 0.08	5.618	3 59 58.3	38.07	3 7.1
29	11 32 15.00	5.626	3 44 43.4	38.17	3 5.4
30	11 34 30.10	5.633	3 29 26.1	38.27	3 3.7
31	11 36 45.38	5.641	3 14 6.4	38.37	3 2.0
32	11 39 0.84	5.649	+ 2 58 44.4	38.47	3 0.3

Day of the Month,	4th.	12th.	20th.	28th.
	″	″	″	″
Polar Semidiameter	2.5	2.4	2.4	2.3
Horizontal Parallax	4.3	4.2	4.1	4.0

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 39 0.84	5.649	+ 2 58 44.4	38.47	3 0.3
2	11 41 16.49	5.657	2 43 20.1	38.56	2 58.6
3	11 43 32.33	5.665	2 27 53.7	38.63	2 56.9
4	11 45 48.36	5.673	2 12 25.3	38.73	2 55.2
5	11 48 4.59	5.680	1 56 54.7	38.81	2 53.5
6	11 50 21.01	5.688	1 41 22.3	38.89	2 51.9
7	11 52 37.63	5.696	1 25 48.1	38.96	2 50.2
8	11 54 54.46	5.705	1 10 12.2	39.03	2 48.6
9	11 57 11.50	5.714	0 54 34.7	39.09	2 46.9
10	11 59 28.75	5.723	0 38 55.8	39.15	2 45.3
11	12 1 46.21	5.732	0 23 15.5	39.21	2 43.6
12	12 4 3.89	5.741	+ 0 7 33.9	39.26	2 42.0
13	12 6 21.80	5.751	− 0 8 8.9	39.31	2 40.3
14	12 8 39.94	5.761	0 23 52.9	39.35	2 38.7
15	12 10 58.32	5.771	0 39 37.9	39.39	2 37.1
16	12 13 16.95	5.782	0 55 23.8	39.43	2 35.5
17	12 15 35.84	5.793	1 11 10.6	39.46	2 33.9
18	12 17 54.99	5.804	1 26 58.2	39.49	2 32.3
19	12 20 14.40	5.815	1 42 46.4	39.52	2 30.7
20	12 22 34.09	5.826	1 58 35.2	39.54	2 29.1
21	12 24 54.07	5.838	2 14 24.5	39.56	2 27.5
22	12 27 14.32	5.850	2 30 14.1	39.58	2 25.9
23	12 29 34.86	5.863	2 46 4.1	39.60	2 24.3
24	12 31 55.71	5.876	3 1 54.4	39.62	2 22.7
25	12 34 16.89	5.890	3 17 44.9	39.62	2 21.1
26	12 36 38.38	5.903	3 33 35.3	39.62	2 19.5
27	12 39 0.19	5.917	3 49 25.5	39.61	2 17.9
28	12 41 22.34	5.931	4 5 15.7	39.59	2 16.3
29	12 43 44.83	5.945	4 21 5.6	39.57	2 14.7
30	12 46 7.64	5.958	4 36 55.1	39.55	2 13.1
31	12 48 30.80	5.972	4 52 44.1	39.53	2 11.5
32	12 50 54.31	5.987	− 5 8 32.3	39.50	2 10.0

Day of the Month,	5th.	13th.	21st.	29th.
	″	″	″	″
Polar Semidiameter	2.3	2.2	2.2	2.2
Horizontal Parallax	4.0	3.9	3.8	3.8

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 50 54.31	5·987	− 5 8 32.3	39·50	2 10.0
2	12 53 18.18	6·002	5 24 19.8	39·47	2 8.4
3	12 55 42.40	6·017	5 40 6.5	39·43	2 6.9
4	12 58 6.98	6·032	5 55 52.2	39·38	2 5.4
5	13 0 31.93	6·048	6 11 36.7	39·33	2 3.9
6	13 2 57.25	6·063	6 27 20.0	39·28	2 2.4
7	13 5 22.95	6·079	6 43 2.0	39·22	2 0.9
8	13 7 49.03	6·096	6 58 42.5	39·15	1 59.4
9	13 10 15.50	6·111	7 14 21.4	39·08	1 57.9
10	13 12 42.36	6·128	7 29 58.5	39·01	1 56.4
11	13 15 9.63	6·145	7 45 33.8	38·93	1 54.9
12	13 17 37.31	6·162	8 1 7.1	38·85	1 53.4
13	13 20 5.41	6·180	8 16 38.4	38·76	1 51.9
14	13 22 33.94	6·198	8 32 7.5	38·66	1 50.4
15	13 25 2.89	6·216	8 47 34.2	38·56	1 49.0
16	13 27 32.28	6·234	9 2 58.5	38·46	1 47.5
17	13 30 2.12	6·253	9 18 20.2	38·35	1 46.1
18	13 32 32.41	6·272	9 33 39.2	38·23	1 44.7
19	13 35 3.17	6·291	9 48 55.4	38·11	1 43.3
20	13 37 34.40	6·311	10 4 8.7	37·99	1 41.9
21	13 40 6.12	6·331	10 19 19.0	37·86	1 40.5
22	13 42 38.34	6·352	10 34 26.0	37·72	1 39.1
23	13 45 11.04	6·373	10 49 29.8	37·58	1 37.7
24	13 47 44.24	6·394	11 4 30.2	37·44	1 36.3
25	13 50 17.94	6·416	11 19 26.9	37·29	1 34.9
26	13 52 52.16	6·437	11 34 19.9	37·13	1 33.5
27	13 55 26.90	6·459	11 49 9.2	36·97	1 32.2
28	13 58 2.16	6·480	12 3 54.4	36·80	1 30.8
29	14 0 37.94	6·502	12 18 35.4	36·63	1 29.5
30	14 3 14.25	6·524	12 33 12.0	36·44	1 28.1
31	14 5 51.09	6·546	12 47 44.3	36·25	1 26.8
32	14 8 28.47	6·569	−13 2 11.9	36·05	1 25.5

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 5 51.09	6·546	−12 47 44.3	36·25	1 26.8
2	14 8 28.47	6·569	13 2 11.9	36·05	1 25.5
3	14 11 6.39	6·592	13 16 34.7	35·85	1 24.2
4	14 13 44.86	6·615	13 30 52.5	35·64	1 22.9
5	14 16 23.88	6·638	13 45 5.4	35·42	1 21.6
6	14 19 3.46	6·661	13 59 13.1	35·20	1 20.3
7	14 21 43.59	6·685	14 13 15.3	34·97	1 19.1
8	14 24 24.28	6·709	14 27 11.9	34·74	1 17.8
9	14 27 5.54	6·733	14 41 2.8	34·50	1 16.6
10	14 29 47.37	6·756	14 54 47.9	34·25	1 15.3
11	14 32 29.78	6·780	15 8 27.0	34·00	1 14.1
12	14 35 12.77	6·804	15 21 59.9	33·74	1 12.8
13	14 37 56.36	6·929	15 35 26.4	33·47	1 11.6
14	14 40 40.54	6·854	15 48 46.4	33·20	1 10.4
15	14 43 25.32	6·879	16 1 59.9	32·92	1 9.2
16	14 46 10.71	6·884	16 15 6.7	32·63	1 8.0
17	14 48 56.71	6·930	16 28 6.4	32·34	1 6.8
18	14 51 43.32	6·955	16 40 58.9	32·04	1 5.6
19	14 54 30.55	6·981	16 53 44.1	31·73	1 4.5
20	14 57 18.40	7·007	17 6 21.9	31·41	1 3.3
21	15 0 6.89	7·033	17 18 52.2	31·09	1 2.2
22	15 2 56.01	7·059	17 31 14.7	30·76	1 1.1
23	15 5 45.76	7·086	17 43 29.4	30·43	1 0.0
24	15 8 36.15	7·113	17 55 36.0	30·09	0 58.9
25	15 11 27.18	7·140	18 7 34.3	29·75	0 57.8
26	15 14 18.84	7·166	18 19 24.2	29·40	0 56.7
27	15 17 11.14	7·193	18 31 5.5	29·04	0 55.7
28	15 20 4.08	7·219	18 42 38.1	28·67	0 54.6
29	15 22 57.65	7·246	18 54 1.6	28·29	0 53.6
30	15 25 51.86	7·272	19 5 16.0	27·90	0 52.5
31	15 28 46.70	7·209	19 16 21.1	27·51	0 51.5
32	15 31 42.18	7·325	−19 27 16.6	27·11	0 50.5

Day of the Month,	6th.	14th.	22d.	30th.
	″	″	″	″
Polar Semidiameter	2.1	2.1	2.1	2.1
Horizontal Parallax	3.7	3.7	3.6	3.6

Day of the Month,	8th.	16th.	24th.
	″	″	″
Polar Semidiameter,	2.1	2.1	2.1
Horizontal Parallax,	3.6	3.6	3.6

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 31 42.18	7.325	−19 27 16.6	27.11	0 50.5
2	15 34 38.28	7.352	19 38 2.5	26.70	0 49.5
3	15 37 35.01	7.378	19 48 38.6	26.29	0 48.5
4	15 40 32.37	7.404	19 59 4.8	25.87	0 47.5
5	15 43 30.35	7.430	20 9 20.8	25.44	0 46.5
6	15 46 28.96	7.455	20 19 26.4	25.01	0 45.6
7	15 49 28.18	7.481	20 29 21.4	24.57	0 44.6
8	15 52 28.02	7.506	20 39 5.7	24.12	0 43.7
9	15 55 28.47	7.531	20 48 39.2	23.66	0 42.7
10	15 58 29.53	7.556	20 58 1.7	23.20	0 41.8
11	16 1 31.20	7.582	21 7 13.0	22.73	0 40.9
12	16 4 33.49	7.608	21 16 12.9	22.25	0 40.0
13	16 7 36.39	7.634	21 25 1.3	21.77	0 39.1
14	16 10 39.90	7.659	21 33 38.0	21.28	0 38.2
15	16 13 44.01	7.684	21 42 3.0	20.78	0 37.3
16	16 16 48.73	7.709	21 50 16.0	20.28	0 36.5
17	16 19 54.04	7.734	21 58 16.8	19.77	0 35.6
18	16 22 59.93	7.758	22 6 5.2	19.25	0 34.8
19	16 26 6.41	7.782	22 13 41.2	18.73	0 33.9
20	16 29 13.46	7.806	22 21 4.6	18.21	0 33.1
21	16 32 21.09	7.830	22 28 15.1	17.67	0 32.3
22	16 35 29.28	7.853	22 35 12.7	17.13	0 31.5
23	16 38 38.03	7.876	22 41 57.1	16.58	0 30.7
24	16 41 47.33	7.898	22 48 28.3	16.02	0 29.9
25	16 44 57.16	7.920	22 54 46.2	15.46	0 29.1
26	16 48 7.52	7.942	23 0 50.6	14.89	0 28.3
27	16 51 18.40	7.963	23 6 41.4	14.32	0 27.5
28	16 54 29.80	7.984	23 12 18.3	13.74	0 26.8
29	16 57 41.68	8.004	23 17 41.3	13.16	0 26.0
30	17 0 54.03	8.024	23 22 50.4	12.57	0 25.3
31	17 4 6.84	8.043	23 27 45.3	11.98	0 24.6
32	17 7 20.11	8.062	−23 32 25.8	11.38	0 23.9

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 4 6.84	8.043	−23 27 45.3	11.98	0 24.6
2	17 7 20.11	8.062	23 32 25.8	11.38	0 23.9
3	17 10 33.81	8.080	23 36 51.8	10.77	0 23.2
4	17 13 47.94	8.098	23 41 3.2	10.16	0 22.5
5	17 17 2.50	8.115	23 44 59.9	9.54	0 21.8
6	17 20 17.46	8.132	23 48 41.7	8.92	0 21.1
7	17 23 32.83	8.148	23 52 8.5	8.30	0 20.4
8	17 26 48.57	8.164	23 55 20.3	7.67	0 19.7
9	17 30 4.68	8.179	23 58 17.0	7.04	0 19.0
10	17 33 21.14	8.193	24 0 58.5	6.40	0 18.4
11	17 36 37.95	8.207	24 3 24.8	5.76	0 17.7
12	17 39 55.09	8.221	24 5 35.6	5.12	0 17.1
13	17 43 12.55	8.234	24 7 30.9	4.47	0 16.4
14	17 46 30.32	8.247	24 9 10.6	3.82	0 15.8
15	17 49 48.39	8.259	24 10 34.5	3.16	0 15.1
16	17 53 6.74	8.270	24 11 42.6	2.50	0 14.5
17	17 56 25.35	8.281	24 12 34.9	1.84	0 13.8
18	17 59 44.21	8.291	24 13 11.4	1.18	0 13.2
19	18 3 3.32	8.301	24 13 32.1	0.52	0 12.6
20	18 6 22.65	8.310	24 13 36.9	0.15	0 12.0
21	18 9 42.19	8.318	24 13 25.7	0.81	0 11.4
22	18 13 1.92	8.325	24 12 58.5	1.48	0 10.8
23	18 16 21.81	8.332	24 12 15.3	2.15	0 10.2
24	18 19 41.87	8.338	24 11 15.9	2.82	0 9.6
25	18 23 2.07	8.343	24 10 0.4	3.49	0 9.0
26	18 26 22.38	8.348	24 8 28.8	4.17	0 8.4
27	18 29 42.79	8.352	24 6 40.9	4.84	0 7.8
28	18 33 3.28	8.355	24 4 36.8	5.52	0 7.1
29	18 36 23.84	8.358	24 2 16.5	6.19	0 6.5
30	18 39 44.45	8.360	23 59 40.1	6.87	0 5.9
31	18 43 5.10	8.361	23 56 47.5	7.54	0 5.3
32	18 46 25.76	8.361	−23 53 38.7	8.21	0 4.7

Day of the Month,	1st.	9th.	17th.	25th.
	″	″	″	″
Polar Semidiameter	2.1	2.1	2.1	2.1
Horizontal Parallax	3.5	3.5	3.5	3.5

Day of the Month,	3d.	11th.	19th.	27th.
	″	″	″	″
Polar Semidiameter	2.1	2.1	2.1	2.1
Horizontal Parallax	3.5	3.5	3.5	3.6

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 37 3.35	2·315	−19 11 25.8	8·42	1 54.1
2	20 37 58.97	2·321	19 8 2.8	8·49	1 51.1
3	20 38 54.74	2·327	19 4 38.2	8·56	1 48.1
4	20 39 50.66	2·333	19 1 11.9	8·63	1 45.1
5	20 40 46.71	2·339	18 57 44.0	8·70	1 42.1
6	20 41 42.89	2·344	18 54 14.5	8·76	1 39.1
7	20 42 39.20	2·349	18 50 43.5	8·83	1 36.1
8	20 43 35.63	2·354	18 47 10.9	8·89	1 33.1
9	20 44 32.17	2·358	18 43 36.8	8·96	1 30.1
10	20 45 28.82	2·362	18 40 1.2	9·02	1 27.1
11	20 46 25.57	2·366	18 36 24.0	9·08	1 24.2
12	20 47 22.40	2·370	18 32 45.4	9·14	1 21.2
13	20 48 19.31	2·373	18 29 5.4	9·20	1 18.2
14	20 49 16.30	2·376	18 25 23.8	9·26	1 15.2
15	20 50 13.37	2·379	18 21 40.9	9·32	1 12.2
16	20 51 10.50	2·382	18 17 56.6	9·38	1 9.2
17	20 52 7.69	2·384	18 14 11.0	9·44	1 6.2
18	20 53 4.94	2·386	18 10 24.0	9·49	1 3.2
19	20 54 2.24	2·388	18 6 35.7	9·55	1 0.3
20	20 54 59.58	2·390	18 2 46.0	9·60	0 57.3
21	20 55 56.95	2·392	17 58 55.1	9·65	0 54.3
22	20 56 54.37	2·393	17 55 2.9	9·70	0 51.3
23	20 57 51.82	2·394	17 51 9.6	9·75	0 48.3
24	20 58 49.29	2·395	17 47 15.0	9·80	0 45.4
25	20 59 46.79	2·396	17 43 19.2	9·85	0 42.4
26	21 0 44.30	2·397	17 39 22.2	9·90	0 39.4
27	21 1 41.82	2·397	17 35 24.1	9·95	0 36.4
28	21 2 39.35	2·397	17 31 24.9	9·99	0 33.5
29	21 3 36.87	2·397	17 27 24.5	10·04	0 30.5
30	21 4 34.39	2·397	17 23 23.1	10·08	0 27.5
31	21 5 31.90	2·396	17 19 20.6	10·13	0 24.5
32	21 6 29.40	2·395	−17 15 17.1	10·17	0 21.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.4	1.4	1.4	1.4
Horizontal Parallax	15.6	15.5	15.4	15.4

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 6 29.40	2·395	−17 15 17.1	10·17	0 21.6
2	21 7 26.87	2·394	17 11 12.6	10·21	0 18.6
3	21 8 24.31	2·393	17 7 7.2	10·25	0 15.6
4	21 9 21.71	2·391	17 3 1.0	10·29	0 12.6
5	21 10 19.08	2·389	16 58 53.6	10·32	0 9.6
6	21 11 16.40	2·387	16 54 45.5	10·36	0 6.6
7	21 12 13.67	2·385	16 50 36.6	10·39	0 3.7
8	21 13 10.88	2·383	16 46 26.9	10·42	0 0.7 23 57.7
9	21 14 8.02	2·380	16 42 16.4	10·45	23 54.7
10	21 15 5.10	2·377	16 38 5.2	10·48	23 51.7
11	21 16 2.10	2·374	16 33 53.3	10·51	23 48.7
12	21 16 59.02	2·370	16 29 40.8	10·54	23 45.7
13	21 17 55.85	2·366	16 25 27.6	10·56	23 42.7
14	21 18 52.59	2·362	16 21 13.7	10·59	23 39.8
15	21 19 49.24	2·358	16 16 59.4	10·61	23 36.8
16	21 20 45.80	2·354	16 12 44.4	10·63	23 33.8
17	21 21 42.25	2·350	16 8 28.9	10·65	23 30.8
18	21 22 38.59	2·345	16 4 12.9	10·67	23 27.8
19	21 23 34.82	2·340	15 59 56.4	10·69	23 24.8
20	21 24 30.94	2·335	15 55 39.6	10·71	23 21.8
21	21 25 26.94	2·330	15 51 22.3	10·73	23 18.8
22	21 26 22.80	2·325	15 47 4.7	10·75	23 15.8
23	21 27 18.54	2·320	15 42 46.7	10·76	23 12.7
24	21 28 14.15	2·314	15 38 28.4	10·77	23 9.7
25	21 29 9.63	2·308	15 34 9.8	10·78	23 6.7
26	21 30 4.96	2·302	15 29 51.0	10·78	23 3.7
27	21 31 0.14	2·296	15 25 32.1	10·79	23 0.7
28	21 31 55.17	2·290	15 21 12.9	10·79	22 57.7
29	21 32 50.05	2·283	15 16 53.6	10·80	22 54.6
30	21 33 44.76	2·276	15 12 34.2	10·80	22 51.6
31	21 34 39.31	2·269	15 8 14.8	10·81	22 48.6
32	21 35 33.69	2·262	−15 3 55.4	10·81	22 45.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.4	1.4	1.4	1.4
Horizontal Parallax	15.4	15.4	15.5	15.6

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 32 50.05	2·283	−15 16 53.6	10·80	22 54.6
2	21 33 44.76	2·276	15 12 34.2	10·80	22 51.6
3	21 34 39.31	2·269	15 8 14.8	10·81	22 48.6
4	21 35 33.69	2·262	15 3 55.4	10·81	22 45.5
5	21 36 27.88	2·255	14 59 36.1	10·81	22 42.5
6	21 37 21.89	2·247	14 55 16.8	10·80	22 39.5
7	21 38 15.71	2·239	14 50 57.6	10·80	22 36.5
8	21 39 9.33	2·231	14 46 38.5	10·79	22 33.4
9	21 40 2.75	2·222	14 42 19.6	10·78	22 30.4
10	21 40 55.96	2·213	14 38 1.0	10·77	22 27.3
11	21 41 48.97	2·204	14 33 42.6	10·76	22 24.3
12	21 42 41.76	2·195	14 29 24.6	10·75	22 21.2
13	21 43 34.32	2·186	14 25 6.8	10·73	22 18.1
14	21 44 26.66	2·176	14 20 49.5	10·71	22 15.1
15	21 45 18.77	2·166	14 16 32.7	10·69	22 12.0
16	21 46 10.64	2·156	14 12 16.2	10·67	22 8.9
17	21 47 2.28	2·146	14 8 0.2	10·65	22 5.8
18	21 47 53.68	2·136	14 3 44.8	10·63	22 2.8
19	21 48 44.83	2·126	13 59 30.0	10·61	21 59.7
20	21 49 35.74	2·116	13 55 15.7	10·59	21 56.6
21	21 50 26.39	2·105	13 51 2.1	10·56	21 53.5
22	21 51 16.78	2·094	13 46 49.1	10·53	21 50.4
23	21 52 6.91	2·083	13 42 36.9	10·50	21 47.3
24	21 52 56.77	2·072	13 38 25.4	10·47	21 44.2
25	21 53 46.36	2·061	13 34 14.8	10·43	21 41.1
26	21 54 35.68	2·049	13 30 5.0	10·39	21 38.0
27	21 55 24.72	2·037	13 25 56.0	10·35	21 34.9
28	21 56 13.47	2·025	13 21 48.0	10·31	21 31.8
29	21 57 1.92	2·013	13 17 41.0	10·27	21 28.6
30	21 57 50.08	2·000	13 13 35.0	10·23	21 25.5
31	21 58 37.93	1·987	13 9 30.0	10·19	21 22.3
32	21 59 25.48	1·974	−13 5 26.1	10·14	21 19.1

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.4	1.5	1.5	1.5
Horizontal Parallax	15.5	15.7	15.9	16.2

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 59 25.48	1·974	−13 5 26.1	10·14	21 19.1
2	22 0 12.71	1·961	13 1 23.4	10·09	21 16.0
3	22 0 59.62	1·948	12 57 21.9	10·04	21 12.8
4	22 1 46.20	1·934	12 53 21.7	9·99	21 9.7
5	22 2 32.45	1·920	12 49 22.7	9·94	21 6.5
6	22 3 18.37	1·906	12 45 25.1	9·88	21 3.3
7	22 4 3.94	1·892	12 41 28.9	9·82	21 0.1
8	22 4 49.16	1·877	12 37 34.1	9·76	20 56.9
9	22 5 34.03	1·862	12 33 40.7	9·70	20 53.7
10	22 6 18.55	1·847	12 29 48.9	9·63	20 50.5
11	22 7 2.70	1·832	12 25 58.6	9·56	20 47.3
12	22 7 46.49	1·817	12 22 10.0	9·49	20 44.1
13	22 8 29.90	1·801	12 18 22.9	9·42	20 40.9
14	22 9 12.94	1·786	12 14 37.6	9·35	20 37.7
15	22 9 55.59	1·770	12 10 54.0	9·28	20 34.5
16	22 10 37.85	1·754	12 7 12.1	9·21	20 31.3
17	22 11 19.73	1·737	12 3 32.0	9·13	20 28.0
18	22 12 1.21	1·720	11 59 53.8	9·05	20 24.8
19	22 12 42.29	1·703	11 56 17.4	8·97	20 21.5
20	22 13 22.97	1·686	11 52 43.0	8·89	20 18.2
21	22 14 3.24	1·669	11 49 10.6	8·81	20 14.9
22	22 14 43.10	1·652	11 45 40.2	8·72	20 11.7
23	22 15 22.54	1·635	11 42 11.9	8·64	20 8.4
24	22 16 1.55	1·617	11 38 45.6	8·55	20 5.1
25	22 16 40.13	1·599	11 35 21.5	8·46	20 1.8
26	22 17 18.28	1·581	11 31 59.7	8·36	19 58.5
27	22 17 55.99	1·562	11 28 40.1	8·27	19 55.2
28	22 18 33.24	1·543	11 25 22.8	8·17	19 51.9
29	22 19 10.04	1·524	11 22 7.9	8·07	19 48.5
30	22 19 46.37	1·504	11 18 55.4	7·97	19 45.2
31	22 20 22.24	1·484	11 15 45.4	7·87	19 41.9
32	22 20 57.63	1·464	−11 12 37.9	7·76	19 38.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.5	1.5	1.6	1.6
Horizontal Parallax	16.3	16.6	17.0	17.4

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 20 22.24	1.484	−11 15 45.4	7.87	19 41.9
2	22 20 57.63	1.464	11 12 37.9	7.76	19 38.5
3	22 21 32.54	1.444	11 9 32.9	7.65	19 35.1
4	22 22 6.96	1.424	11 6 30.5	7.54	19 31.8
5	22 22 40.89	1.403	11 3 30.8	7.43	19 28.4
6	22 23 14.32	1.382	11 0 33.8	7.32	19 25.0
7	22 23 47.24	1.361	10 57 39.6	7.21	19 21.6
8	22 24 19.65	1.340	10 54 48.1	7.09	19 18.2
9	22 24 51.54	1.318	10 51 59.5	6.97	19 14.8
10	22 25 22.92	1.296	10 49 13.7	6.85	19 11.4
11	22 25 53.77	1.274	10 46 30.9	6.73	19 7.9
12	22 26 24.09	1.252	10 43 51.0	6.60	19 4.5
13	22 26 53.86	1.230	10 41 14.1	6.47	19 1.0
14	22 27 23.11	1.207	10 38 40.3	6.34	18 57.6
15	22 27 51.81	1.184	10 36 9.6	6.22	18 54.1
16	22 28 19.96	1.161	10 33 42.0	6.09	18 50.7
17	22 28 47.55	1.138	10 31 17.5	5.96	18 47.2
18	22 29 14.58	1.115	10 28 56.2	5.82	18 43.7
19	22 29 41.05	1.091	10 26 38.2	5.68	18 40.2
20	22 30 6.94	1.067	10 24 23.5	5.54	18 36.7
21	22 30 32.26	1.043	10 22 12.1	5.40	18 33.2
22	22 30 56.99	1.018	10 20 4.0	5.26	18 29.7
23	22 31 21.13	0.993	10 17 59.4	5.12	18 26.2
24	22 31 44.68	0.968	10 15 58.3	4.97	18 22.6
25	22 32 7.62	0.943	10 14 0.7	4.83	18 19.0
26	22 32 29.96	0.918	10 12 6.7	4.68	18 15.4
27	22 32 51.69	0.893	10 10 16.3	4.53	18 11.8
28	22 33 12.80	0.867	10 8 29.5	4.38	18 8.2
29	22 33 33.28	0.841	10 6 46.3	4.22	18 4.6
30	22 33 53.13	0.814	10 5 6.9	4.06	18 1.0
31	22 34 12.33	0.787	10 3 31.4	3.90	17 57.4
32	22 34 30.89	0.760	−10 1 59.5	3.74	17 53.8

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.6	1.7	1.7	1.8
Horizontal Parallax	17.4	17.9	18.5	19.1

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 34 30.89	0.760	−10 1 59.5	3.74	17 53.8
2	22 34 48.80	0.733	10 0 31.6	3.58	17 50.2
3	22 35 6.06	0.705	9 59 7.6	3.42	17 46.5
4	22 35 22.65	0.677	9 57 47.5	3.26	17 42.8
5	22 35 38.58	0.649	9 56 31.2	3.10	17 39.1
6	22 35 53.84	0.621	9 55 18.9	2.93	17 35.4
7	22 36 8.43	0.593	9 54 10.7	2.76	17 31.7
8	22 36 22.35	0.565	9 53 6.5	2.59	17 28.0
9	22 36 35.58	0.537	9 52 6.4	2.42	17 24.3
10	22 36 48.13	0.509	9 51 10.3	2.25	17 20.6
11	22 36 59.99	0.480	9 50 18.4	2.08	17 16.9
12	22 37 11.17	0.451	9 49 30.6	1.91	17 13.1
13	22 37 21.65	0.422	9 48 46.9	1.73	17 9.3
14	22 37 31.44	0.393	9 48 7.4	1.56	17 5.6
15	22 37 40.52	0.364	9 47 32.0	1.39	17 1.8
16	22 37 48.91	0.335	9 47 0.9	1.21	16 58.0
17	22 37 56.59	0.305	9 46 34.0	1.03	16 54.2
18	22 38 3.56	0.276	9 46 11.4	0.86	16 50.4
19	22 38 9.82	0.246	9 45 53.0	0.68	16 46.6
20	22 38 15.37	0.216	9 45 38.8	0.50	16 42.7
21	22 38 20.19	0.186	9 45 29.0	0.32	16 38.8
22	22 38 24.30	0.156	9 45 23.5	+0.14	16 34.9
23	22 38 27.68	0.126	9 45 22.3	−0.04	16 31.0
24	22 38 30.34	0.096	9 45 25.5	0.22	16 27.1
25	22 38 32.27	0.066	9 45 33.0	0.40	16 23.2
26	22 38 33.46	0.035	9 45 44.8	0.58	16 19.3
27	22 38 33.93	+0.004	9 46 1.0	0.77	16 15.4
28	22 38 33.66	−0.027	9 46 21.6	0.95	16 11.5
29	22 38 32.65	0.058	9 46 46.5	1.13	16 7.5
30	22 38 30.90	0.088	9 47 15.8	1.30	16 3.5
31	22 38 28.42	0.119	9 47 49.4	1.47	15 59.5
32	22 38 25.20	0.149	− 9 48 27.3	1.65	15 55.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.8	1.8	1.9	1.9
Horizontal Parallax	19.1	19.8	20.5	21.1

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R.A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	22 38 28.42	0·119	− 9 47 49.4	1·47	15 59.5
2	22 38 25.20	0·149	9 48 27.3	1·65	15 55.5
3	22 38 21.25	0·180	9 49 9.5	1·83	15 51.5
4	22 38 16.57	0·210	9 49 56.0	2·02	15 47.5
5	22 38 11.16	0·240	9 50 46.8	2·21	15 43.5
6	22 38 5.03	0·270	9 51 41.8	2·39	15 39.4
7	22 37 58.17	0·300	9 52 41.0	2·56	15 35.4
8	22 37 50.60	0·330	9 53 44.4	2·73	15 31.3
9	22 37 42.32	0·360	9 54 52.0	2·90	15 27.3
10	22 37 33.32	0·390	9 56 3.7	3·07	15 23.2
11	22 37 23.62	0·419	9 57 19.4	3·24	15 19.1
12	22 37 13.22	0·448	9 58 39.2	3·41	15 15.0
13	22 37 2.12	0·477	10 0 2.9	3·57	15 10.8
14	22 36 50.33	0·506	10 1 30.6	3·74	15 6.7
15	22 36 37.86	0·534	10 3 2.2	3·90	15 2.5
16	22 36 24.71	0·562	10 4 37.7	4·07	14 58.4
17	22 36 10.90	0·590	10 6 17.0	4·23	14 54.2
18	22 35 56.41	0·618	10 8 0.0	4·38	14 50.1
19	22 35 41.27	0·645	10 9 46.7	4·52	14 45.9
20	22 35 25.47	0·672	10 11 37.0	4·67	14 41.7
21	22 35 9.03	0·698	10 13 31.0	4·82	14 37.5
22	22 34 51.95	0·725	10 15 28.4	4·97	14 33.3
23	22 34 34.25	0·751	10 17 29.3	5·11	14 29.0
24	22 34 15.92	0·777	10 19 33.6	5·25	14 24.8
25	22 33 56.98	0·802	10 21 41.1	5·38	14 20.5
26	22 33 37.44	0·827	10 23 51.9	5·51	14 16.3
27	22 33 17.31	0·851	10 26 5.8	5·64	14 12.0
28	22 32 56.61	0·875	10 28 22.8	5·77	14 7.7
29	22 32 35.34	0·898	10 30 42.7	5·89	14 3.4
30	22 32 13.52	0·920	10 33 5.5	6·01	13 59.1
31	22 31 51.17	0·942	10 35 31.1	6·12	13 54.8
32	22 31 28.30	0·963	−10 37 59.3	6·23	13 50.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.9	2.0	2.1	2.1
Horizontal Parallax	21.1	21.7	22.2	22.7

AUGUST.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R.A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	22 31 28.30	0·963	−10 37 59.3	6·23	13 50.5
2	22 31 4.92	0·984	10 40 29.9	6·33	13 46.2
3	22 30 41.05	1·004	10 43 3.1	6·43	13 41.8
4	22 30 16.71	1·023	10 45 38.7	6·53	13 37.5
5	22 29 51.93	1·042	10 48 16.4	6·62	13 33.1
6	22 29 26.70	1·060	10 50 56.2	6·70	13 28.8
7	22 29 1.05	1·077	10 53 38.0	6·78	13 24.5
8	22 28 35.00	1·093	10 56 21.7	6·86	13 20.1
9	22 28 8.56	1·109	10 59 7.2	6·93	13 15.7
10	22 27 41.75	1·124	11 1 54.2	6·99	13 11.3
11	22 27 14.60	1·138	11 4 42.9	7·05	13 6.9
12	22 26 47.11	1·152	11 7 32.9	7·11	13 2.5
13	22 26 19.32	1·164	11 10 24.2	7·16	12 58.1
14	22 25 51.25	1·176	11 13 16.6	7·21	12 53.7
15	22 25 22.89	1·187	11 16 10.1	7·25	12 49.3
16	22 24 54.28	1·197	11 19 4.4	7·28	12 44.9
17	22 24 25.44	1·206	11 21 59.6	7·31	12 40.5
18	22 23 56.39	1·215	11 24 55.4	7·34	12 36.1
19	22 23 27.14	1·223	11 27 51.7	7·36	12 31.7
20	22 22 57.72	1·229	11 30 48.4	7·37	12 27.3
21	22 22 28.15	1·235	11 33 45.4	7·38	12 22.8
22	22 21 58.44	1·240	11 36 42.6	7·38	12 18.4
23	22 21 28.62	1·245	11 39 39.7	7·38	12 14.0
24	22 20 58.71	1·248	11 42 36.7	7·37	12 9.6
25	22 20 28.73	1·250	11 45 33.5	7·36	12 5.1
26	22 19 58.71	1·251	11 48 30.0	7·34	12 0.7
27	22 19 28.67	1·251	11 51 25.9	7·31	11 56.3
28	22 18 58.64	1·251	11 54 21.1	7·28	11 51.9
29	22 18 28.63	1·249	11 57 15.6	7·25	11 47.4
30	22 17 58.68	1·246	12 0 9.1	7·21	11 43.0
31	22 17 28.81	1·243	12 3 1.6	7·16	11 38.6
32	22 16 59.03	1·240	−12 5 52.9	7·11	11 34.1

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	2.1	2.1	2.1	2.1
Horizontal Parallax	22.7	23.1	23.3	23.3

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 16 59.03	1·240	−12 5 52.9	7·11	11 34.1
2	22 16 29.38	1·234	12 8 42.9	7·05	11 29.7
3	22 15 59.87	1·226	12 11 31.4	6·99	11 25.3
4	22 15 30.54	1·218	12 14 18.3	6·92	11 20.9
5	22 15 1.40	1·209	12 17 3.6	6·85	11 16.5
6	22 14 32.47	1·200	12 19 47.0	6·77	11 12.1
7	22 14 3.77	1·191	12 22 28.5	6·69	11 7.7
8	22 13 35.33	1·180	12 25 7.9	6·60	11 3.3
9	22 13 7.17	1·167	12 27 45.3	6·51	10 58.9
10	22 12 39.30	1·154	12 30 20.4	6·41	10 54.5
11	22 12 11.76	1·141	12 32 53.1	6·31	10 50.1
12	22 11 44.55	1·127	12 35 23.4	6·21	10 45.7
13	22 11 17.70	1·111	12 37 51.2	6·10	10 41.3
14	22 10 51.22	1·095	12 40 16.3	5·99	10 36.9
15	22 10 25.13	1·078	12 42 38.8	5·88	10 32.5
16	22 9 59.46	1·061	12 44 58.5	5·76	10 28.2
17	22 9 34.21	1·043	12 47 15.2	5·63	10 23.9
18	22 9 9.41	1·024	12 49 29.0	5·51	10 19.8
19	22 8 45.07	1·004	12 51 39.7	5·38	10 15.2
20	22 8 21.22	0·984	12 53 47.3	5·25	10 10.9
21	22 7 57.86	0·963	12 55 51.6	5·11	10 6.6
22	22 7 35.02	0·941	12 57 52.6	4·97	10 2.3
23	22 7 12.72	0·918	12 59 50.2	4·83	9 58.0
24	22 6 50.96	0·895	13 1 44.4	4·68	9 53.7
25	22 6 29.76	0·871	13 3 35.0	4·53	9 49.4
26	22 6 9.15	0·846	13 5 22.1	4·38	9 45.1
27	22 5 49.14	0·821	13 7 5.5	4·23	9 40.8
28	22 5 29.74	0·795	13 8 45.2	4·08	9 36.6
29	22 5 10.97	0·769	13 10 21.1	3·92	9 32.4
30	22 4 52.84	0·742	13 11 53.2	3·76	9 28.1
31	22 4 35.36	0·715	13 13 21.4	3·59	9 23.9
32	22 4 18.54	0·687	−13 14 45.6	3·43	9 19.7

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 4 35.36	0·715	−13 13 21.4	3·59	9 23.9
2	22 4 18.54	0·687	13 14 45.6	3·43	9 19.7
3	22 4 2.40	0·658	13 16 5.9	3·26	9 15.6
4	22 3 46.95	0·630	13 17 22.2	3·09	9 11.4
5	22 3 32.18	0·601	13 18 34.4	2·92	9 7.2
6	22 3 18.12	0·571	13 19 42.5	2·76	9 3.0
7	22 3 4.77	0·541	13 20 46.5	2·59	8 58.8
8	22 2 52.14	0·511	13 21 46.3	2·42	8 54.7
9	22 2 40.24	0·481	13 22 42.1	2·24	8 50.6
10	22 2 29.07	0·450	13 23 33.7	2·07	8 46.5
11	22 2 18.63	0·419	13 24 21.0	1·89	8 42.4
12	22 2 8.96	0·388	13 25 4.2	1·70	8 38.3
13	22 2 0.02	0·357	13 25 43.1	1·52	8 34.2
14	22 1 51.83	0·326	13 26 17.8	1·34	8 30.1
15	22 1 44.40	0·294	13 26 48.2	1·17	8 26.1
16	22 1 37.73	0·263	13 27 14.3	1·00	8 22.1
17	22 1 31.82	0·231	13 27 36.2	0·83	8 18.1
18	22 1 26.67	0·199	13 27 53.9	0·65	8 14.1
19	22 1 22.30	0·166	13 28 7.3	0·47	8 10.1
20	22 1 18.70	0·134	13 28 16.3	0·29	8 6.1
21	22 1 15.88	0·101	13 28 21.1	−0·11	8 2.1
22	22 1 13.84	0·069	13 28 21.7	+0·07	7 58.2
23	22 1 12.59	0·036	13 28 17.9	0·25	7 54.2
24	22 1 12.11	−0·003	13 28 9.7	0·43	7 50.3
25	22 1 12.43	+0·030	13 27 57.4	0·61	7 46.3
26	22 1 13.53	0·062	13 27 40.7	0·79	7 42.4
27	22 1 15.42	0·095	13 27 19.7	0·96	7 38.5
28	22 1 18.09	0·128	13 26 54.4	1·14	7 34.6
29	22 1 21.55	0·161	13 26 24.8	1·32	7 30.8
30	22 1 25.79	0·193	13 25 50.9	1·50	7 26.9
31	22 1 30.82	0·225	13 25 12.7	1·68	7 23.0
32	22 1 36.62	0·256	−13 24 30.3	1·86	7 19.2

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	2.1	2.1	2.1	2.0	Polar Semidiameter	2.0	2.0	1.9	1.9
Horizontal Parallax	23.3	23.0	22.7	22.3	Horizontal Parallax	22.3	21.7	21.0	20.4

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 1 36.62	0·258	−13 24 30.3	1·86	7 19.2
2	22 1 43.20	0·291	13 23 43.8	2·03	7 15.4
3	22 1 50.57	0·323	13 22 53.0	2·21	7 11.6
4	22 1 58.60	0·356	13 21 58.0	2·38	7 7.8
5	22 2 7.58	0·387	13 20 58.9	2·55	7 4.0
6	22 2 17.24	0·419	13 19 55.8	2·72	7 0.2
7	22 2 27.65	0·450	13 18 48.4	2·90	6 56.4
8	22 2 38.82	0·481	13 17 37.0	3·07	6 52.7
9	22 2 50.73	0·512	13 16 21.5	3·24	6 49.0
10	22 3 3.39	0·543	13 15 1.8	3·40	6 45.3
11	22 3 16.78	0·573	13 13 38.2	3·57	6 41.6
12	22 3 30.89	0·604	13 12 10.6	3·73	6 37.9
13	22 3 45.73	0·634	13 10 39.0	3·90	6 34.3
14	22 4 1.30	0·664	13 9 3.6	4·06	6 30.6
15	22 4 17.58	0·093	13 7 24.2	4·23	6 26.9
16	22 4 34.56	0·723	13 5 40.8	4·39	6 23.2
17	22 4 52.25	0·752	13 3 53.6	4·55	6 19.6
18	22 5 10.64	0·781	13 2 2.5	4·71	6 16.0
19	22 5 29.72	0·909	13 0 7.6	4·87	6 12.4
20	22 5 49.49	0·838	12 58 8.9	5·02	6 8.8
21	22 6 9.94	0·867	12 56 6.4	5·18	6 5.2
22	22 6 31.08	0·896	12 54 0.1	5·34	6 1.6
23	22 6 52.88	0·923	12 51 50.0	5·50	5 58.0
24	22 7 15.36	0·950	12 49 36.3	5·65	5 54.4
25	22 7 38.49	0·977	12 47 18.8	5·81	5 50.9
26	22 8 2.27	1·004	12 44 57.8	5·96	5 47.4
27	22 8 26.70	1·031	12 42 33.1	6·11	5 43.9
28	22 8 51.77	1·058	12 40 4.8	6·26	5 40.4
29	22 9 17.47	1·084	12 37 32.9	6·41	5 36.9
30	22 9 43.79	1·110	12 34 57.5	6·55	5 33.4
31	22 10 10.72	1·135	12 32 18.6	6·70	5 29.9
32	22 10 38.25	1·160	−12 29 36.2	6·84	5 26.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.9	1.8	1.8	1.7
Horizontal Parallax	20.3	19.7	19.1	18.4

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 10 10.72	1·135	−12 32 18.6	6·70	5 29.9
2	22 10 38.25	1·160	12 29 36.2	6·84	5 26.4
3	22 11 6.39	1·185	12 26 50.4	6·99	5 22.9
4	22 11 35.12	1·210	12 24 1.1	7·13	5 19.4
5	22 12 4.44	1·234	12 21 8.5	7·27	5 16.0
6	22 12 34.33	1·257	12 18 12.6	7·40	5 12.6
7	22 13 4.78	1·280	12 15 13.3	7·54	5 9.2
8	22 13 35.78	1·303	12 12 10.8	7·67	5 5.8
9	22 14 7.33	1·326	12 9 5.1	7·81	5 2.4
10	22 14 39.42	1·349	12 5 56.1	7·94	4 59.0
11	22 15 12.05	1·371	12 2 44.0	8·07	4 55.6
12	22 15 45.21	1·393	11 50 28.8	8·20	4 52.2
13	22 16 18.88	1·414	11 56 10.4	8·33	4 48.8
14	22 16 53.06	1·435	11 52 48.9	8·46	4 45.4
15	22 17 27.75	1·456	11 49 24.4	8·59	4 42.0
16	22 18 2.93	1·477	11 45 56.8	8·71	4 38.7
17	22 18 38.61	1·497	11 42 26.4	8·84	4 35.4
18	22 19 14.76	1·517	11 38 52.9	8·96	4 32.0
19	22 19 51.40	1·537	11 35 16.4	9·08	4 28.7
20	22 20 28.51	1·556	11 31 37.1	9·20	4 25.4
21	22 21 6.09	1·575	11 27 54.9	9·32	4 22.1
22	22 21 44.12	1·594	11 24 9.8	9·43	4 18.8
23	22 22 22.60	1·613	11 20 21.9	9·55	4 15.5
24	22 23 1.52	1·631	11 16 31.3	9·67	4 12.2
25	22 23 40.88	1·649	11 12 37.9	9·79	4 9.0
26	22 24 20.66	1·667	11 8 41.7	9·90	4 5.7
27	22 25 0.86	1·684	11 4 43.0	10·01	4 2.4
28	22 25 41.48	1·701	11 0 41.5	10·12	3 59.2
29	22 26 22.50	1·717	10 56 37.4	10·23	3 56.0
30	22 27 3.91	1·733	10 52 30.7	10·33	3 52.7
31	22 27 45.71	1·748	10 48 21.6	10·43	3 49.5
32	22 28 27.89	1·763	−10 44 9.9	10·52	3 46.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	1.7	1.7	1.6	1.6
Horizontal Parallax	18.4	17.9	17.4	17.0

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 16 58.68	0·921	−15 58 47.8	3·25	20 31.2
2	15 17 20.67	0·911	16 0 5.2	3·20	20 27.7
3	15 17 42.40	0·900	16 1 21.3	3·14	20 24.1
4	15 18 3.87	0·889	16 2 36.1	3·09	20 20.5
5	15 18 25.08	0·878	16 3 49.5	3·03	20 16.9
6	15 18 46.03	0·867	16 5 1.6	2·98	20 13.3
7	15 19 6.72	0·856	16 6 12.4	2·92	20 9.8
8	15 19 27.14	0·845	16 7 21.9	2·87	20 6.2
9	15 19 47.28	0·833	16 8 30.0	2·81	20 2.6
10	15 20 7.13	0·821	16 9 36.7	2·75	19 59.0
11	15 20 26.60	0·809	16 10 42.0	2·69	19 55.3
12	15 20 45.96	0·797	16 11 46.0	2·64	19 51.7
13	15 21 4.94	0·785	16 12 48.6	2·58	19 48.1
14	15 21 23.62	0·772	16 13 49.8	2·52	19 44.5
15	15 21 41.99	0·759	16 14 49.6	2·46	19 40.9
16	15 22 0.05	0·746	16 15 48.0	2·40	19 37.2
17	15 22 17.80	0·733	16 16 45.0	2·34	19 33.6
18	15 22 35.24	0·720	16 17 40.5	2·28	19 29.9
19	15 22 52.36	0·707	16 18 34.6	2·22	19 26.3
20	15 23 9.16	0·693	16 19 27.3	2·16	19 22.6
21	15 23 25.63	0·679	16 20 18.5	2·10	19 18.9
22	15 23 41.77	0·666	16 21 8.3	2·05	19 15.3
23	15 23 57.58	0·652	16 21 56.7	1·99	19 11.6
24	15 24 13.05	0·638	16 22 43.6	1·92	19 7.9
25	15 24 28.18	0·624	16 23 29.0	1·86	19 4.2
26	15 24 42.96	0·609	16 24 13.0	1·80	19 0.5
27	15 24 57.39	0·594	16 24 55.5	1·74	18 56.8
28	15 25 11.47	0·579	16 25 36.6	1·68	18 53.1
29	15 25 25.19	0·564	16 26 16.2	1·62	18 49.4
30	15 25 38.55	0·549	16 26 54.3	1·55	18 45.7
31	15 25 51.55	0·534	16 27 30.8	1·49	18 42.0
32	15 26 4.18	0·519	−16 28 5.8	1·43	18 38.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.5	7.6	7.7	7.8
Horizontal Parallax	0.8	0.8	0.8	0.8

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 26 4.18	0·519	−16 28 5.8	1·43	18 38.3
2	15 26 16.44	0·503	16 28 39.3	1·36	18 34.5
3	15 26 28.32	0·487	16 29 11.3	1·30	18 30.8
4	15 26 39.82	0·471	16 29 41.8	1·24	18 27.0
5	15 26 50.94	0·455	16 30 10.8	1·18	18 23.3
6	15 27 1.67	0·439	16 30 38.3	1·11	18 19.5
7	15 27 12.02	0·423	16 31 4.3	1·05	18 15.8
8	15 27 21.96	0·407	16 31 28.7	0·99	18 12.0
9	15 27 31.54	0·390	16 31 51.6	0·92	18 8.2
10	15 27 40.71	0·374	16 32 13.0	0·86	18 4.4
11	15 27 49.48	0·357	16 32 32.9	0·80	18 0.6
12	15 27 57.86	0·341	16 32 51.3	0·73	17 56.8
13	15 28 5.84	0·324	16 33 8.1	0·67	17 53.0
14	15 28 13.42	0·307	16 33 23.4	0·61	17 49.2
15	15 28 20.59	0·290	16 33 37.2	0·54	17 45.4
16	15 28 27.36	0·274	16 33 49.5	0·48	17 41.6
17	15 28 33.73	0·257	16 34 0.3	0·42	17 37.7
18	15 28 39.69	0·240	16 34 9.6	0·36	17 33.9
19	15 28 45.24	0·223	16 34 17.4	0·29	17 30.1
20	15 28 50.38	0·206	16 34 23.7	0·23	17 26.2
21	15 28 55.11	0·189	16 34 28.5	0·17	17 22.4
22	15 28 59.43	0·171	16 34 31.7	0·10	17 18.5
23	15 29 3.34	0·154	16 34 33.4	−0·04	17 14.6
24	15 29 6.83	0·137	16 34 33.7	+0·02	17 10.7
25	15 29 9.91	0·120	16 34 32.5	0·08	17 6.9
26	15 29 12.58	0·102	16 34 29.8	0·14	17 3.0
27	15 29 14.83	0·085	16 34 25.6	0·21	16 59.1
28	15 29 16.66	0·067	16 34 19.9	0·27	16 55.2
29	15 29 18.06	0·050	16 34 12.7	0·33	16 51.3
30	15 29 19.04	0·032	16 34 4.1	0·39	16 47.4
31	15 29 19.60	+0·015	16 33 54.0	0·45	16 43.4
32	15 29 19.75	−0·002	−16 33 42.5	0·51	16 39.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.8	7.9	8.1	8.2
Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 29 18.06	0·050	−16 34 12.7	0·33	16 51.3
2	15 29 19.04	0·032	16 34 4.1	0·39	16 47.4
3	15 29 19.60	+0·015	16 33 54.0	0·45	16 43.4
4	15 29 19.75	−0·002	16 33 42.5	0·51	16 39.5
5	15 29 19.49	0·020	16 33 29.5	0·57	16 35.6
6	15 29 18.81	0·037	16 33 15.0	0·63	16 31.6
7	15 29 17.71	0·054	16 32 59.1	0·69	16 27.6
8	15 29 16.20	0·072	16 32 41.7	0·75	16 23.7
9	15 29 14.27	0·089	16 32 22.9	0·81	16 19.7
10	15 29 11.93	0·106	16 32 2.7	0·87	16 15.7
11	15 29 9.19	0·123	16 31 41.1	0·93	16 11.8
12	15 29 6.04	0·140	16 31 18.1	0·99	16 7.8
13	15 29 2.48	0·157	16 30 53.7	1·04	16 3.8
14	15 28 58.52	0·173	16 30 28.0	1·10	15 59.8
15	15 28 54.16	0·190	16 30 1.0	1·16	15 55.8
16	15 28 49.40	0·206	16 29 32.6	1·21	15 51.8
17	15 28 44.25	0·223	16 29 2.8	1·27	15 47.7
18	15 28 38.71	0·239	16 28 31.7	1·32	15 43.7
19	15 28 32.78	0·256	16 27 59.4	1·37	15 39.7
20	15 28 26.47	0·271	16 27 25.8	1·43	15 35.6
21	15 28 19.78	0·287	16 26 50.9	1·48	15 31.6
22	15 28 12.71	0·303	16 26 14.7	1·53	15 27.5
23	15 28 5.26	0·318	16 25 37.3	1·58	15 23.5
24	15 27 57.44	0·334	16 24 58.7	1·63	15 19.4
25	15 27 49.25	0·349	16 24 18.9	1·68	15 15.3
26	15 27 40.70	0·364	16 23 37.9	1·73	15 11.2
27	15 27 31.70	0·379	16 22 55.7	1·78	15 7.1
28	15 27 22.52	0·394	16 22 12.3	1·83	15 3.1
29	15 27 12.89	0·408	16 21 27.8	1·88	14 59.0
30	15 27 2.98	0·423	16 20 42.2	1·92	14 54.9
31	15 26 52.61	0·437	16 19 55.5	1·97	14 50.8
32	15 26 41.96	0·451	−16 19 7.7	2·01	14 46.6

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 26 41.96	0·451	−16 19 7.7	2·01	14 46.6
2	15 26 30.97	0·465	16 18 18.8	2·06	14 42.5
3	15 26 19.65	0·478	16 17 28.9	2·10	14 38.4
4	15 26 8.01	0·491	16 16 37.9	2·15	14 34.3
5	15 25 56.06	0·504	16 15 45.9	2·19	14 30.2
6	15 25 43.81	0·517	16 14 53.0	2·22	14 26.0
7	15 25 31.26	0·529	16 13 59.1	2·26	14 21.9
8	15 25 18.41	0·541	16 13 4.3	2·30	14 17.7
9	15 25 5.27	0·553	16 12 8.6	2·34	14 13.6
10	15 24 51.86	0·564	16 11 12.0	2·37	14 9.4
11	15 24 38.18	0·576	16 10 14.6	2·41	14 5.3
12	15 24 24.23	0·587	16 9 16.4	2·44	14 1.1
13	15 24 10.02	0·597	16 8 17.4	2·47	13 56.9
14	15 23 55.57	0·607	16 7 17.7	2·50	13 52.7
15	15 23 40.88	0·617	16 6 17.2	2·53	13 48.5
16	15 23 25.95	0·627	16 5 16.0	2·56	13 44.4
17	15 23 10.79	0·636	16 4 14.2	2·59	13 40.2
18	15 22 55.41	0·645	16 3 11.7	2·62	13 36.0
19	15 22 39.82	0·654	16 2 8.6	2·64	13 31.8
20	15 22 24.03	0·662	16 1 4.9	2·66	13 27.6
21	15 22 8.04	0·670	16 0 0.7	2·69	13 23.4
22	15 21 51.86	0·678	15 58 55.9	2·71	13 19.2
23	15 21 35.49	0·686	15 57 50.6	2·73	13 15.0
24	15 21 18.95	0·693	15 56 44.9	2·75	13 10.8
25	15 21 2.25	0·699	15 55 38.7	2·77	13 6.6
26	15 20 45.40	0·705	15 54 32.1	2·78	13 2.4
27	15 20 28.40	0·711	15 53 25.1	2·80	12 58.2
28	15 20 11.26	0·717	15 52 17.8	2·81	12 53.9
29	15 19 53.99	0·722	15 51 10.2	2·82	12 49.7
30	15 19 36.60	0·727	15 50 2.3	2·83	12 45.5
31	15 19 19.10	0·731	15 48 54.2	2·84	12 41.3
32	15 19 1.49	0·735	−15 47 45.8	2·85	12 37.1

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.2	8.3	8.4	8.5
Horizontal Parallax	0.9	0.9	0.9	0.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.5	8.6	8.7	8.8
Horizontal Parallax	0.9	1.0	1.0	1.0

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 19 19.10	0·731	−15 48 54.2	2·84	12 41.3
2	15 19 1.49	0·736	15 47 45.8	2·85	12 37.1
3	15 18 43.78	0·740	15 46 37.3	2·86	12 32.9
4	15 18 25.99	0·743	15 45 28.7	2·86	12 28.6
5	15 18 8.14	0·745	15 44 20.0	2·86	12 24.4
6	15 17 50.23	0·748	15 43 11.2	2·87	12 20.2
7	15 17 32.26	0·750	15 42 2.4	2·87	12 15.9
8	15 17 14.25	0·751	15 40 53.6	2·86	12 11.7
9	15 16 56.20	0·752	15 39 44.9	2·86	12 7.5
10	15 16 38.13	0·753	15 38 36.3	2·86	12 3.2
11	15 16 20.05	0·734	15 37 27.8	2·85	11 59.0
12	15 16 1.96	0·754	15 36 19.5	2 84	11 54.8
13	15 15 43.88	0·753	15 35 11.5	2·83	11 50.5
14	15 15 25.81	0·752	15 34 3.7	2·82	11 46.3
15	15 15 7.76	0·751	15 32 56.1	2·81	11 42.1
16	15 14 49.75	0·750	15 31 48.8	2·80	11 37.8
17	15 14 31.78	0·748	15 30 41.9	2·78	11 33.6
18	15 14 13.85	0·746	15 29 35.4	2·76	11 29.4
19	15 13 55.98	0·743	15 28 29.3	2·75	11 25.1
20	15 13 38.18	0·740	15 27 23.6	2·73	11 20.9
21	15 13 20.45	0·737	15 26 18.4	2·70	11 16.7
22	15 13 2.80	0·734	15 25 13.8	2·68	11 12.5
23	15 12 45.24	0·730	15 24 9.7	2·66	11 8.3
24	15 12 27.78	0·725	15 23 6.2	2·63	11 4.0
25	15 12 10.43	0·720	15 22 3.3	2·61	10 59.8
26	15 11 53.20	0·715	15 21 1.1	2·58	10 55.6
27	15 11 36.10	0·710	15 19 59.5	2·55	10 51.4
28	15 11 19.14	0·704	15 18 58.6	2·52	10 47.2
29	15 11 2.32	0·698	15 17 58.5	2·49	10 43.0
30	15 10 45.65	0·091	15 16 59.2	2·45	10 38.8
31	15 10 29.14	0·684	15 16 0.8	2·42	10 34.6
32	15 10 12.80	0·677	−15 15 3.2	2·38	10 30.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.8	8.8	8.8	8.7
Horizontal Parallax	1.0	1.0	1.0	1.0

JUNE.

Day of Month.	Apparent Right Ascension Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 10 12.80	0·677	−15 15 3.2	2·38	10 30.4
2	15 9 56.64	0·670	15 14 6.5	2·34	10 26.2
3	15 9 40.66	0·662	15 13 10.7	2·30	10 22.0
4	15 9 24.87	0·654	15 12 15.9	2·26	10 17.8
5	15 9 9.29	0·645	15 11 22.1	2·22	10 13.6
6	15 8 53.92	0·636	15 10 29.3	2·18	10 9.4
7	15 8 38.77	0·627	15 9 37.5	2·14	10 5.2
8	15 8 23.84	0·617	15 8 46.8	2·09	10 1.0
9	15 8 9.15	0·607	15 7 57.2	2·04	9 56.9
10	15 7 54.70	0·597	15 7 8.7	2·00	9 52.7
11	15 7 40.49	0·587	15 6 21.4	1·95	9 48.5
12	15 7 26.53	0·576	15 5 35.3	1·90	9 44.4
13	15 7 12.83	0·565	15 4 50.4	1·85	9 40.2
14	15 6 59.39	0·554	15 4 6.7	1·79	9 36.1
15	15 6 46.22	0·543	15 3 24.3	1·74	9 31.9
16	15 6 33.32	0·532	15 2 43.2	1·69	9 27.8
17	15 6 20.70	0·520	15 2 3.4	1·63	9 23.6
18	15 6 8.37	0·508	15 1 25.0	1·57	9 19.5
19	15 5 56.33	0·495	15 0 47.9	1·52	9 15.4
20	15 5 44.59	0·483	15 0 12.2	1·46	9 11.3
21	15 5 33.14	0·471	14 59 37.8	1·40	9 7.1
22	15 5 21.99	0·458	14 59 4.8	1·35	9 3.0
23	15 5 11.15	0·445	14 58 33.2	1·29	8 58.9
24	15 5 0.63	0·432	14 58 3.1	1·22	8 54.8
25	15 4 50.43	0·418	14 57 34.5	1·16	8 50.7
26	15 4 40.56	0·404	14 57 7.3	1·10	8 46.6
27	15 4 31.02	0·391	14 56 41.6	1·04	8 42.5
28	15 4 21.81	0·377	14 56 17.4	0·98	8 38.4
29	15 4 12.94	0·363	14 55 54.7	0·91	8 34.4
30	15 4 4.41	0·348	14 55 33.6	0·85	8 30.3
31	15 3 56.23	0·333	14 55 14.1	0·78	8 26.2
32	15 3 48.41	0·319	−14 54 56.1	0·72	8 22.2

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.7	8.6	8.6	8.5
Horizontal Parallax	1.0	1.0	0.9	0.9

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 3 56.23	0·333	−14 55 14.1	0·78	8 26.2
2	15 3 48.41	0·319	14 54 56.1	0·72	8 22.2
3	15 3 40.94	0·304	14 54 39.7	0·65	8 18.1
4	15 3 33.83	0·289	14 54 24.9	0·58	8 14.1
5	15 3 27.08	0·274	14 54 11.7	0·52	8 10.0
6	15 3 20.69	0·259	14 54 0.1	0·45	8 6.0
7	15 3 14.66	0·244	14 53 50.1	0·38	8 2.0
8	15 3 9.00	0·228	14 53 41.7	0·31	7 57.9
9	15 3 3.71	0·213	14 53 35.0	0·25	7 53.9
10	15 2 58.80	0·197	14 53 29.9	0·18	7 49.9
11	15 2 54.26	0·181	14 53 26.5	0·11	7 45.9
12	15 2 50.09	0·166	14 53 24.8	+0·04	7 41.9
13	15 2 46.30	0·150	14 53 24.7	−0·03	7 37.9
14	15 2 42.89	0·134	14 53 26.2	0·10	7 33.9
15	15 2 39.86	0·118	14 53 29.4	0·17	7 29.9
16	15 2 37.21	0·102	14 53 34.2	0·24	7 26.0
17	15 2 34.94	0·087	14 53 40.7	0·31	7 22.0
18	15 2 33.05	0·071	14 53 48.9	0·38	7 18.0
19	15 2 31.54	0·055	14 53 58.7	0·44	7 14.1
20	15 2 30.42	0·039	14 54 10.1	0·51	7 10.1
21	15 2 29.68	0·023	14 54 23.2	0·58	7 6.2
22	15 2 29.32	−0·007	14 54 38.0	0·65	7 2.2
23	15 2 29.35	+0·009	14 54 54.5	0·72	6 58.3
24	15 2 29.77	0·026	14 55 12.6	0·79	6 54.4
25	15 2 30.58	0·042	14 55 32.3	0·86	6 50.5
26	15 2 31.77	0·058	14 55 53.6	0·92	6 46.6
27	15 2 33.35	0·074	14 56 16.6	0·99	6 42.7
28	15 2 35.32	0·090	14 56 41.2	1·06	6 38.8
29	15 2 37.68	0·106	14 57 7.4	1·12	6 34.9
30	15 2 40.43	0·123	14 57 35.2	1·19	6 31.0
31	15 2 43.57	0·139	14 58 4.7	1·26	6 27.1
32	15 2 47.10	0·155	−14 58 35.8	1·33	6 23.2

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.5	8.3	8.2	8.1
Horizontal Parallax	0.9	0.9	0.9	0.9

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 2 47.10	0·155	−14 58 35.8	1·33	6 23.2
2	15 2 51.01	0·171	14 59 8.5	1·40	6 19.4
3	15 2 55.30	0·187	14 59 42.8	1·46	6 15.5
4	15 2 59.98	0·203	15 0 18.7	1·53	6 11.7
5	15 3 5.05	0·219	15 0 56.1	1·59	6 7.8
6	15 3 10.51	0·235	15 1 35.1	1·66	6 4.0
7	15 3 16.35	0·251	15 2 15.6	1·72	6 0.1
8	15 3 22.57	0·267	15 2 57.7	1·79	5 56.3
9	15 3 29.17	0·283	15 3 41.3	1·85	5 52.5
10	15 3 36.15	0·299	15 4 26.5	1·91	5 48.7
11	15 3 43.50	0·314	15 5 13.2	1·97	5 44.9
12	15 3 51.22	0·329	15 6 1.3	2·03	5 41.1
13	15 3 59.31	0·345	15 6 50.8	2·09	5 37.3
14	15 4 7.77	0·360	15 7 41.8	2·13	5 33.5
15	15 4 16.60	0·375	15 8 34.3	2·22	5 29.7
16	15 4 25.79	0·390	15 9 28.2	2·27	5 25.9
17	15 4 35.34	0·405	15 10 23.5	2·33	5 22.2
18	15 4 45.25	0·420	15 11 20.2	2·39	5 18.4
19	15 4 55.52	0·435	15 12 18.3	2·45	5 14.6
20	15 5 6.15	0·450	15 13 17.8	2·51	5 10.9
21	15 5 17.14	0·465	15 14 18.6	2·56	5 7.1
22	15 5 28.48	0·480	15 15 20.7	2·61	5 3.4
23	15 5 40.17	0·495	15 16 24.1	2·67	4 59.7
24	15 5 52.22	0·509	15 17 28.9	2·73	4 55.9
25	15 6 4.62	0·524	15 18 35.0	2·78	4 52.2
26	15 6 17.36	0·538	15 19 42.3	2·83	4 48.5
27	15 6 30.44	0·552	15 20 50.9	2·88	4 44.8
28	15 6 43.86	0·566	15 22 0.7	2·93	4 41.0
29	15 6 57.62	0·580	15 23 11.7	2·98	4 37.3
30	15 7 11.72	0·595	15 24 23.9	3·03	4 33.6
31	15 7 26.16	0·609	15 25 37.3	3·08	4 30.0
32	15 7 40.93	0·622	−15 26 51.9	3·13	4 26.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.0	7.9	7.8	7.6
Horizontal Parallax	0.9	0.9	0.9	0.8

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 7 40.93	0·622	−15 26 51.9	3·13	4 26.3
2	15 7 56.02	0·636	15 28 7.7	3·18	4 22.6
3	15 8 11.43	0·649	15 29 24.6	3·23	4 18.9
4	15 8 27.16	0·662	15 30 42.6	3·27	4 15.3
5	15 8 43.20	0·675	15 32 1.6	3·31	4 11.6
6	15 8 59.56	0·688	15 33 21.7	3·36	4 7.9
7	15 9 16.23	0·701	15 34 42.8	3·40	4 4.3
8	15 9 33.21	0·714	15 36 4.9	3·44	4 0.6
9	15 9 50.49	0·726	15 37 28.1	3·49	3 57.0
10	15 10 8.07	0·739	15 38 52.3	3·53	3 53.3
11	15 10 25.95	0·751	15 40 17.4	3·56	3 49.7
12	15 10 44.12	0·763	15 41 43.4	3·60	3 46.1
13	15 11 2.58	0·775	15 43 10.3	3·64	3 42.4
14	15 11 21.33	0·787	15 44 38.1	3 68	3 38.8
15	15 11 40.36	0·799	15 46 6.8	3·71	3 35.2
16	15 11 59.66	0·810	15 47 36.4	3·75	3 31.6
17	15 12 19.24	0·822	15 49 6.8	3·78	3 28.0
18	15 12 39.10	0·833	15 50 38.0	3·82	3 24.4
19	15 12 59.24	0·844	15 52 10.0	3·85	3 20.8
20	15 13 19.64	0·855	15 53 42.7	3·88	3 17.2
21	15 13 40.30	0·866	15 55 16.1	3·91	3 13.6
22	15 14 1.22	0·877	15 56 50.3	3·94	3 10.0
23	15 14 22.40	0·888	15 58 25.2	3·97	3 6.5
24	15 14 43.84	0·899	16 0 0.9	4·00	3 2.9
25	15 15 5.54	0·909	16 1 37.3	4·03	2 59.3
26	15 15 27.48	0·919	16 3 14.3	4·05	2 55.7
27	15 15 49.66	0·929	16 4 51.9	4·08	2 52.2
28	15 16 12.08	0·939	16 6 30.1	4·10	2 48.6
29	15 16 34.73	0·949	16 8 8.8	4·13	2 45.0
30	15 16 57.62	0·959	16 9 48.1	4·15	2 41.5
31	15 17 20.74	0·968	16 11 28.0	4·17	2 37.9
32	15 17 44.08	0·977	−16 13 8.4	4·19	2 34.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.6	7.5	7.4	7.3
Horizontal Parallax	0.8	0.8	0.8	0.8

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 17 20.74	0·968	−16 11 28.0	4·17	2 37.9
2	15 17 44.08	0·977	16 13 8.4	4·19	2 34.4
3	15 18 7.64	0·986	16 14 49.2	4·21	2 30.8
4	15 18 31.42	0·995	16 16 30.5	4·23	2 27.3
5	15 18 55.41	1·004	16 18 12.2	4·25	2 23.8
6	15 19 19.60	1·012	16 19 54.4	4·27	2 20.3
7	15 19 43.99	1·020	16 21 37.0	4·28	2 16.7
8	15 20 8.58	1·028	16 23 20.0	4·30	2 13.2
9	15 20 33.36	1·036	16 25 3.3	4·31	2 9.7
10	15 20 58.33	1·044	16 26 46.9	4·33	2 6.2
11	15 21 23.49	1·052	16 28 30.9	4·34	2 2.6
12	15 21 48.83	1·060	16 30 15.2	4·35	1 59.1
13	15 22 14.35	1·067	16 31 59.7	4·36	1 55.6
14	15 22 40.05	1·075	16 33 44.5	4·37	1 52.1
15	15 23 5.93	1·082	16 35 29.5	4·38	1 48.6
16	15 23 31.97	1·088	16 37 14.7	4·39	1 45.1
17	15 23 58.17	1·095	16 39 0.1	4·40	1 41.6
18	15 24 24.53	1·102	16 40 45.7	4·40	1 38.1
19	15 24 51.05	1·108	16 42 31.4	4·41	1 34.6
20	15 25 17.72	1·114	16 44 17.3	4·41	1 31.2
21	15 25 44.53	1·120	16 46 3.3	4·42	1 27.7
22	15 26 11.48	1·126	16 47 49.4	4·42	1 24.2
23	15 26 38.58	1·132	16 49 35.5	4·42	1 20.7
24	15 27 5.82	1·138	16 51 21.7	4·43	1 17.2
25	15 27 33.19	1·143	16 53 7.9	4·43	1 13.7
26	15 28 0.69	1·148	16 54 54.2	4·42	1 10.3
27	15 28 28.31	1·153	16 56 40.5	4·43	1 6.8
28	15 28 56.04	1·158	16 58 26.7	4·43	1 3.3
29	15 29 23.88	1·162	17 0 12.9	4·42	0 59.8
30	15 29 51.83	1·167	17 1 59.0	4·42	0 56.4
31	15 30 19.88	1·171	17 3 45.0	4·41	0 52.9
32	15 30 48.03	1·175	−17 5 30.9	4·41	0 49.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.3	7.3	7.2	7.2
Horizontal Parallax	0.8	0.8	0.8	0.8

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 30 48.03	1·175	−17 5 30.9	4·41	0 49.4
2	15 31 16.27	1·179	17 7 16.7	4·40	0 46.0
3	15 31 44.60	1·182	17 9 2.3	4·40	0 42.5
4	15 32 13.02	1·186	17 10 47.7	4·39	0 39.1
5	15 32 41.52	1·189	17 12 33.0	4·38	0 35.6
6	15 33 10.09	1·192	17 14 18.1	4·37	0 32.1
7	15 33 38.73	1·195	17 16 2.9	4·36	0 28.7
8	15 34 7.44	1·198	17 17 47.5	4·35	0 25.2
9	15 34 36.21	1·200	17 19 31.8	4·34	0 21.8
10	15 35 5.04	1·203	17 21 15.8	4·33	0 18.3
11	15 35 33.93	1·205	17 22 59.5	4·31	0 14.9
12	15 36 2.87	1·207	17 24 42.9	4·30	0 11.4
13	15 36 31.85	1·208	17 26 26.0	4·29	0 8.0
14	15 37 0.87	1·210	17 28 8.8	4·28	0 4.5
15	15 37 29.92	1·211	17 29 51.2	4·26	0 1.1 23 57.6
16	15 37 59.01	1·213	17 31 33.2	4·24	23 54.2
17	15 38 28.13	1·214	17 33 14.8	4·22	23 50.7
18	15 38 57.27	1·215	17 34 56.0	4·21	23 47.3
19	15 39 26.43	1·215	17 36 36.8	4·19	23 43.8
20	15 39 55.61	1·216	17 38 17.1	4·17	23 40.4
21	15 40 24.80	1·216	17 39 57.0	4·15	23 36.9
22	15 40 53.99	1·216	17 41 36.4	4·13	23 33.5
23	15 41 23.18	1·216	17 43 15.3	4·11	23 30.0
24	15 41 52.36	1·215	17 44 53.8	4·09	23 26.6
25	15 42 21.53	1·215	17 46 31.8	4·07	23 23.1
26	15 42 50.69	1·215	17 48 9.2	4·05	23 19.7
27	15 43 19.83	1·214	17 49 46.0	4·02	23 16.3
28	15 43 48.94	1·212	17 51 22.2	4·00	23 12.8
29	15 44 18.02	1·211	17 52 57.8	3·97	23 9.4
30	15 44 47.06	1·209	17 54 32.8	3·95	23 5.9
31	15 45 16.06	1·208	17 56 7.2	3·92	23 2.5
32	15 45 45.02	1·206	−17 57 41.0	3·89	22 59.0

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 45 16.06	1·208	−17 56 7.2	3·92	23 2.5
2	15 45 45.02	1·206	17 57 41.0	3·89	22 59.0
3	15 46 13.93	1·203	17 59 14.1	3·87	22 55.6
4	15 46 42.78	1·201	18 0 46.6	3·84	22 52.1
5	15 47 11.56	1·198	18 2 18.4	3·81	22 48.6
6	15 47 40.28	1·195	18 3 49.5	3·78	22 45.2
7	15 48 8.93	1·192	18 5 19.9	3·75	22 41.7
8	15 48 37.51	1·189	18 6 49.6	3·72	22 38.3
9	15 49 6.01	1·186	18 8 18.6	3·69	22 34.8
10	15 49 34.42	1·182	18 9 46.8	3·66	22 31.3
11	15 50 2.74	1·178	18 11 14.3	3·63	22 27.9
12	15 50 30.97	1·174	18 12 41.1	3·60	22 24.4
13	15 50 59.10	1·170	18 14 7.1	3·57	22 20.9
14	15 51 27.13	1·166	18 15 32.3	3·53	22 17.5
15	15 51 55.05	1·161	18 16 56.7	3·50	22 14.0
16	15 52 22.86	1·156	18 18 20.3	3·47	22 10.5
17	15 52 50.56	1·152	18 19 43.1	3·43	22 7.1
18	15 53 18.14	1·147	18 21 5.0	3·40	22 3.6
19	15 53 45.59	1·141	18 22 26.1	3·36	22 0.1
20	15 54 12.91	1·135	18 23 46.4	3·33	21 56.6
21	15 54 40.09	1·130	18 25 5.9	3·29	21 53.1
22	15 55 7.13	1·124	18 26 24.5	3·26	21 49.6
23	15 55 34.02	1·117	18 27 42.2	3·22	21 46.2
24	15 56 0.75	1·110	18 28 59.0	3·18	21 42.7
25	15 56 27.32	1·104	18 30 14.9	3·14	21 39.2
26	15 56 53.73	1·097	18 31 29.9	3·11	21 35.7
27	15 57 19.98	1·090	18 32 44.0	3·07	21 32.2
28	15 57 46.06	1·083	18 33 57.2	3·03	21 28.7
29	15 58 11.96	1·075	18 35 9.5	2·99	21 25.2
30	15 58 37.67	1·067	18 36 20.9	2·95	21 21.7
31	15 59 3.19	1·059	18 37 31.3	2·91	21 18.2
32	15 59 28.51	1·051	−18 38 40.7	2·87	21 14.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.2	7.1	7.1	7.1
Horizontal Parallax	0.8	0.8	0.8	0.8

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.1	7.2	7.2	7.3
Horizontal Parallax	0.8	0.8	0.8	0.8

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Jan. 1	1	+.1820706	—.8864134	—.3845719	Mar. 1	60	+.9343556	—.3039220	—.1318561
2	2	.1992385	.8833069	.3832238	2	61	.9402530	.2889476	.1253599
3	3	.2163452	.8799236	.3817558	3	62	.9458641	.2738845	.1188251
4	4	.2333850	.8762648	.3801685	4	63	.9511870	.2587375	.1122540
5	5	.2503521	.8723317	.3784624	5	64	.9562203	.2435113	.1056487
6	6	+.2672410	—.8681257	—.3766379	6	65	+.9609627	—.2282110	—.0990109
7	7	.2840460	.8636484	.3746956	7	66	.9654130	.2128415	.0923433
8	8	.3007615	.8589012	.3726363	8	67	.9695698	.1974077	.0856480
9	9	.3173823	.8538856	.3704607	9	68	.9734321	.1819146	.0789270
10	10	.3339029	.8486035	.3681697	10	69	.9769988	.1663673	.0721822
11	11	+.3503180	—.8430570	—.3657641	11	70	+.9802695	—.1507710	—.0654159
12	12	.3666223	.8372482	.3632448	12	71	.9832440	.1351306	.0586303
13	13	.3828109	.8311793	.3606125	13	72	.9859221	.1194511	.0518276
14	14	.3988791	.8248526	.3578683	14	73	.9883035	.1037374	.0450099
15	15	.4148221	.8182706	.3550132	15	74	.9903881	.0879940	.0381792
16	16	+.4306352	—.8114355	—.3520481	16	75	+.9921757	—.0722255	—.0313375
17	17	.4463137	.8043495	.3489740	17	76	.9936664	.0564266	.0244868
18	18	.4618530	.7970150	.3457920	18	77	.9948603	.0406318	.0176291
19	19	.4772490	.7894344	.3425030	19	78	.9957576	.0248156	.0107665
20	20	.4924973	7816101	.3391082	20	79	.9963583	—.0089923	—.0039007
21	21	+.5075933	— 7735446	— 3356086	21	80	+.9966627	+.0068335	+.0029663
22	22	.5225328	.7652402	.3320052	22	81	.9966709	.0226578	.0098325
23	23	.5373118	7566092	.3282990	23	82	.9963830	.0384760	.0166959
24	24	.5519259	7479241	.3244911	24	83	.9957992	.0542837	.0235546
25	25	.5663704	7389172	.3205827	25	84	.9949196	.0700764	.0304067
26	26	+.5806406	—.7296811	—.3165750	26	85	+.9937444	+.0858497	+.0372504
27	27	.5947324	.7202183	.3124689	27	86	.9922738	.1015987	.0440634
28	28	.6086413	.7105314	.3082657	28	87	9905082	.1173188	.0509036
29	29	.6223630	.7006233	.3039668	29	88	.9884480	.1330056	.0577091
30	30	.6358930	.6904972	.2995735	30	89	.9860937	.1486544	.0644980
31	31	+.6492270	—.6801562	—.2950870	31	90	+.9834460	+.1642605	+.0712682
Feb. 1	32	.6623606	.6696034	.2905085	Apr. 1	91	.9805056	1798189	.0780177
2	33	.6752894	.6588420	.2858397	2	92	.9772735	1953246	.0847443
3	34	.6880091	.6478756	.2810823	3	93	.9737508	.2107729	.0914460
4	35	.7005152	.6367081	.2762378	4	94	.9699389	.2261587	.0981206
5	36	+.7128036	—.6253432	—.2713078	5	95	+.9658389	+.2414774	+.1047661
6	37	.7248701	6137848	.2662938	6	96	.9614525	.2567241	.1113804
7	38	.7367117	6020366	.2611975	7	97	.9567815	.2718941	.1179615
8	39	.7483251	.5901028	.2560236	8	98	.9518277	.2869828	.1245077
9	40	.7597068	.5779874	.2507650	9	99	.9465932	.3019856	.1310168
10	41	+.7708533	—.5656945	—.2454323	10	100	+.9410803	+.3168981	+.1374869
11	42	.7817612	.5532284	.2400244	11	101	.9352913	.3317160	.1439160
12	43	.7924274	5405934	.2345428	12	102	.9292283	.3464353	.1503024
13	44	.8028493	.5277938	.2289899	13	103	.9228935	.3610518	.1566442
14	45	.8130244	.5148337	.2233672	14	104	.9162893	.3755613	.1629307
15	46	+.8229499	—.5017172	—.2176765	15	105	+.9094182	+.3899597	+.1691871
16	47	.8326231	.4884483	.2119196	16	106	.9022826	.4042433	.1753849
17	48	.8420416	.4750311	.2060982	17	107	.8948850	.4184084	.1815313
18	49	.8512034	.4614697	.2002139	18	108	.8872276	.4324516	.1876247
19	50	.8601063	.4477680	.1942685	19	109	.8793127	4463694	.1936636
20	51	+.8687475	—.4339209	—.1882639	20	110	+.8711427	+.4601581	+.1996465
21	52	.8771245	.4199594	.1822021	21	111	.8627202	.4738140	.2055715
22	53	.8852350	4058605	.1760846	22	112	.8540475	.4873332	.2114370
23	54	.8930768	.3916375	.1699131	23	113	.8451270	.5007121	.2172416
24	55	.9006475	.3772944	.1636895	24	114	.8359611	.5139470	.2229837
25	56	+.9079448	—.3628353	—.1574157	25	115	+.8265522	+.5270345	+.2286615
26	57	.9149665	.3482641	.1510935	26	116	.8169028	.5399706	.2342735
27	58	.9217102	.3335851	.1447248	27	117	.8070155	.5527512	.2398179
28	59	.9281739	.3188028	.1383117	28	118	.7968032	.5653724	.2452931
29	60	.9343556	.3039220	.1318561	29	119	.7865390	.5778307	.2506975
30	61	+.9402530	—.2889476	—.1253599	30	120	+.7759559	+.5901223	+.2560295
31	62	+.9458641	—.2738845	—.1188251	31	121	+.7651469	+.6022435	+.2612875

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
May 1	121	+.7651469	+.6022435	+.2612875	July 1	182	—.1613612	+.9209728	+.3995652
2	122	.7541153	.6141905	.2664700	2	183	.1780481	.9183865	.3984435
3	123	.7428647	.6259597	.2715755	3	184	.1946847	.9155401	.3972091
4	124	.7313985	.6375474	.2766023	4	185	.2112656	.9124346	.3958623
5	125	.7197204	.6489501	.2815490	5	186	.2277856	.9090711	.3944037
6	126	+.7078343	+.6601643	+.2864142	6	187	—.2442400	+.9054508	+.3928337
7	127	.6957441	.6711870	.2911965	7	188	.2606243	.9015749	.3911529
8	128	.6834538	.6820152	.2958946	8	189	.2769338	.8974449	.3893618
9	129	.6709674	.6926461	.3005071	9	190	.2931637	8930624	.3874611
10	130	.6582892	.7030768	.3050329	10	191	.3093095	.8884290	.3854516
11	131	+.6454232	+.7133046	+.3094708	11	192	—.3253668	+.8835461	+.3833337
12	132	.6323733	.7233269	.3138197	12	193	.3413314	.8784154	.3811079
13	133	.6191433	.7331412	.3180784	13	194	.3571993	.8730385	.3787752
14	134	.6057373	7427453	.3222459	14	195	.3729660	.8674172	.3763364
15	135	.5921597	.7521369	.3263211	15	196	.3886272	.8615531	.3737921
16	136	+.5784144	+.7613136	+.3303029	16	197	—.4041790	+.8554477	+.3711429
17	137	.5645053	.7702732	.3341904	17	198	.4196176	.8491026	.3683896
18	138	.5504361	.7790137	.3379829	18	199	.4349391	.8425195	.3655330
19	139	.5362106	.7875332	.3416794	19	200	.4501393	.8357000	.3625738
20	140	.5218327	.7958297	.3452790	20	201	.4652139	.8286457	.3595127
21	141	+.5073063	+.8039009	+.3487806	21	202	—.4801583	+.8213581	+.3563503
22	142	.4926351	.8117444	.3521831	22	203	.4949687	.8138388	.3530873
23	143	.4778231	.8193580	.3554857	23	204	.5096410	.8060894	.3497247
24	144	.4628744	.8267396	.3586877	24	205	.5241710	.7981117	.3462631
25	145	.4477928	.8338871	.3617880	25	206	.5385544	.7899075	.3427034
26	146	+.4325824	+.8407982	+.3647856	26	207	—.5527870	+.7814789	+.3390464
27	147	.4172475	.8474707	.3676798	27	208	.5668642	.7728280	.3352931
28	148	.4017925	.8539027	.3704697	28	209	.5807812	.7639574	.3314446
29	149	.3862220	.8600921	.3731544	29	210	.5945338	.7548692	.3275019
30	150	.3705403	.8660369	.3757329	30	211	.6081179	.7455660	.3234661
31	151	+.3547519	+.8717351	+.3782045	31	212	—.6215293	+.7360504	+.3193384
June 1	152	.3388618	.8771849	.3805685	Aug. 1	213	.6347638	.7263254	.3151198
2	153	.3228748	.8823847	.3828241	2	214	.6478171	.7163937	.3108116
3	154	.3067958	.8873329	.3849708	3	215	.6606854	.7062582	.3064152
4	155	.2906298	.8920281	.3870079	4	216	.6733650	.6959221	.3019318
5	156	+.2743817	+.8964691	+.3889349	5	217	—.6858519	+.6853886	+.2973625
6	157	.2580565	.9006551	.3907514	6	218	.6981426	.6746612	.2927088
7	158	.2416593	.9045851	.3924570	7	219	.7102338	.6637432	.2879723
8	159	.2251950	.9082583	.3940513	8	220	.7221220	.6526377	.2831545
9	160	.2086685	.9116740	.3955338	9	221	.7338041	.6413480	.2782567
10	161	+.1920845	+.9148315	+.3969044	10	222	—.7452771	+.6298774	+.2732803
11	162	.1754477	.9177304	.3981627	11	223	.7565380	.6182291	.2682265
12	163	.1587629	.9203703	.3993086	12	224	.7675839	.6064064	.2630969
13	164	.1420348	.9227509	.4003420	13	225	.7784117	.5944127	.2578929
14	165	.1252678	.9248721	.4012627	14	226	.7890187	.5822511	.2526159
15	166	+.1084665	+.9267335	+.4020705	15	227	—.7994018	+.5699248	+.2472672
16	167	.0916353	.9283349	.4027653	16	228	.8095579	.5574368	.2418484
17	168	.0747785	.9296759	.4033470	17	229	.8194845	.5447902	.2363610
18	169	.0579006	.9307561	.4038156	18	230	.8291789	.5319886	.2308063
19	170	.0410060	.9315754	.4041708	19	231	.8386382	.5190350	.2251856
20	171	+.0240991	+.9321336	+.4044125	20	232	—.8478594	+.5059324	+.2195004
21	172	+.0071845	.9324303	.4045406	21	233	.8568398	.4926841	.2137522
22	173	—.0097333	.9324652	.4045550	22	234	.8655759	.4792937	.2079425
23	174	.0266498	.9322380	.4044557	23	235	.8740649	.4657648	.2020729
24	175	.0435606	.9317485	.4042426	24	236	.8823041	.4521011	.1961449
25	176	—.0604608	+.9309965	+.4039156	25	237	—.8902906	+.4383064	+.1901601
26	177	.0773454	.9299817	.4034747	26	238	.8980215	.4243846	.1841203
27	178	.0942094	.9287041	.4029200	27	239	.9054939	.4103394	.1780272
28	179	.1110479	.9271642	.4022516	28	240	.9127052	.3961748	.1718825
29	180	.1278560	.9253622	.4014696	29	241	.9196528	.3818952	.1656879
30	181	—.1446288	+.9232983	+.4005740	30	242	—.9263343	+.3675050	+.1594453
31	182	—.1613612	+.9209728	+.3995652	31	243	—.9327476	+.3530087	+.1531566

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Sept. 1	244	—.9388906	+.3384105	+.1468237	Nov. 1	305	—.7750164	—.5680120	—.2464342
2	245	.9447614	.3237150	.1404485	2	306	.7638707	.5802063	.2517251
3	246	.9503581	.3089269	.1340330	3	307	.7524935	.5922231	.2569392
4	247	.9556793	.2940506	.1275791	4	308	.7408887	.6040586	.2620748
5	248	.9607234	.2790903	.1210887	5	309	.7290600	.6157094	.2671303
6	249	—.9654870	+.2640506	+.1145637	6	310	—.7170109	—.6271724	—.2721042
7	250	.9699747	.2489361	.1080060	7	311	.7047451	.6384441	.2769950
8	251	.9741794	.2337511	.1014175	8	312	.6922665	.6495210	.2818013
9	252	.9781021	.2184997	.0948001	9	313	.6795786	6604000	.2865218
10	253	.9817418	.2031862	.0881557	10	314	.6666850	.6710781	.2911551
11	254	—.9850977	+.1878147	+.0814861	11	315	—.6535893	—.6815622	—.2956997
12	255	.9881687	.1723895	.0747930	12	316	.6402949	.6918190	.3001542
13	256	.9909539	.1569149	.0680785	13	317	.6268055	.7018756	.3045174
14	257	.9934523	.1413951	.0613444	14	318	.6131249	.7117194	.3087880
15	258	.9956628	.1258343	.0545925	15	319	.5992569	.7213471	.3129647
16	259	—.9975846	+.1102367	+.0478247	16	320	—.5852054	—.7307554	—.3170461
17	260	.9992169	.0946065	.0410429	17	321	.5709741	.7399413	.3210307
18	261	1.0005588	.0789479	.0342490	18	322	.5565667	.7489017	.3249173
19	262	1.0016094	.0632652	.0274448	19	323	.5419871	.7576332	.3287046
20	263	1.0023678	.0475627	.0206321	20	324	.5272395	.7661326	.3323913
21	264	-1.0028332	+.0318446	+.0138127	21	325	—.5123285	—.7743768	—.3359761
22	265	1.0030047	.0161150	.0069886	22	326	.4972586	.7824230	.3394577
23	266	1.0028818	+.0003790	+.0001619	23	327	.4820341	.7902083	.3428349
24	267	1.0024639	—.0153584	—.0066653	24	328	.4666598	.7977498	.3461065
25	268	1.0017506	.0310925	.0134910	25	329	.4511405	.8050451	.3492713
26	269	-1.0007416	—.0468184	—.0203132	26	330	—.4354810	—.8120916	—.3523282
27	270	.9994366	.0625310	.0271296	27	331	.4196865	.8188866	.3552761
28	271	.9978357	.0782252	.0339381	28	332	.4037622	.8254271	.3581140
29	272	.9959392	.0938959	.0407365	29	333	.3877132	.8317111	.3608408
30	273	.9937475	.1095384	.0475227	30	334	.3715448	.8377369	.3634556
Oct. 1	274	—.9912613	—.1251479	—.0542946	Dec. 1	335	—.3552624	—.8435028	—.3659576
2	275	.9884811	.1407196	.0610502	2	336	.3388715	.8490068	.3683461
3	276	.9854078	.1562484	.0677874	3	337	.3223772	.8542472	.3706204
4	277	.9820424	.1717207	.0745041	4	338	.3057846	.8592228	.3727799
5	278	.9783855	.1871585	.0811983	5	339	.2890989	.8639324	.3748239
6	279	—.9744389	—.2025302	—.0878679	6	340	—.2723251	—.8683744	—.3767518
7	280	.9702038	.2178402	.0945109	7	341	.2554685	.8725487	.3785630
8	281	.9656815	.2330844	.1011253	8	342	.2385342	.8764531	.3802572
9	282	.9608735	.2482584	.1077093	9	343	.2215274	.8800868	.3818339
10	283	.9557812	.2633577	.1142610	10	344	.2044529	.8834488	.3832927
11	284	—.9504060	—.2783779	—.1207783	11	345	—.1873156	—.8865381	—.3846329
12	285	.9447493	.2933148	.1272596	12	346	.1701204	.8893540	.3858542
13	286	.9388124	.3081645	.1337030	13	347	.1528723	.8918955	.3869563
14	287	.9325968	.3229230	.1401066	14	348	.1355763	.8941615	.3879390
15	288	.9261038	.3375865	.1464687	15	349	.1182374	.8961510	.3888016
16	289	—.9193349	—.3521505	—.1527873	16	350	—.1008607	—.8978633	—.3895438
17	290	.9122916	.3666102	.1590607	17	351	.0834514	.8992776	.3901653
18	291	.9049755	.3809612	.1652869	18	352	.0660146	.9004530	.3906659
19	292	.8973882	.3951994	.1714640	19	353	.0485555	.9013287	.3910451
20	293	.8895315	.4093206	.1775901	20	354	—.0310797	.9019240	.3913027
21	294	—.8814070	—.4233203	—.1836634	21	355	—.0135926	—.9022384	—.3914385
22	295	.8730165	.4371941	.1896820	22	356	+.0039002	.9022712	.3914524
23	296	.8643622	.4509374	.1956439	23	357	.0213930	.9020220	.3913443
24	297	.8554462	.4645455	.2015473	24	358	.0388800	.9014908	.3911140
25	298	.8462709	.4780140	.2073901	25	359	.0563554	.9006777	.3907615
26	299	—.8368389	—.4913384	—.2131704	26	360	+.0738132	—.8995828	—.3902868
27	300	.8271529	.5045141	.2188863	27	361	.0912477	.8982067	.3896902
28	301	.8172156	.5175368	.2245358	28	362	.1086531	.8965497	.3889719
29	302	.8070301	.5304021	.2301171	29	363	.1260238	.8946123	.3881321
30	303	.7965996	.5431058	.2356285	30	364	.1433540	.8923953	.3871710
31	304	—.7859271	—.5556438	—.2410681	31	365	+.1606383	—.8898998	—.3860890
32	305	—.7750164	—.5680120	—.2464342	32	366	+.1778712	—.8871268	—.3848865

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	231° 23′ 34″.5	+4° 5′ 8″.2	275° 25′ 12″.5	+5° 2′ 46″.2	283° 26′ 24″.1	+4° 57′ 13″.3
1.5	237 18 24.3	4 21 52.5	281 27 6.1	4 54 50.4	289 29 46.8	4 44 14 9
2.0	243 13 12.5	4 35 46.7	287 31 18.0	4 43 32.2	295 36 2.5	4 27 57.3
2.5	249 8 21.7	4 46 42 4	293 38 0.8	4 28 54.5	301 45 33.3	4 8 25.6
3.0	255 4 11.2	4 54 32.8	299 47 24.2	4 11 2.5	307 58 38.4	3 45 47.0
3.5	261 0 57.3	4 59 11.5	305 59 35.0	3 50 3.8	314 15 32.8	3 20 11.2
4.0	266 58 53.6	5 0 34.5	312 14 37.8	3 26 8.7	320 36 27.9	2 51 51.0
4.5	272 58 11.4	4 58 38.5	318 32 35.1	2 59 30.1	327 1 30.8	2 21 1.9
5.0	278 58 59.7	4 53 22.4	324 53 28.2	2 30 23.9	333 30 44.5	1 48 3.1
5.5	285 1 25.7	4 44 46.7	331 17 17.2	1 59 8.5	340 4 8.1	1 13 17.1
6.0	291 5 36.0	4 32 54.2	337 44 2.0	1 26 5.1	346 41 36.6	0 37 9.6
6.5	297 11 36.0	4 17 49.6	344 13 42.3	0 51 37.3	353 23 1.7	+0 0 9.4
7.0	303 19 31.6	3 59 39.8	350 46 18.4	+0 16 10.8	0 8 11.6	−0 37 12.0
7.5	309 29 29.1	3 38 34.0	357 21 51.0	−0 19 46.7	6 56 52.0	1 14 21.5
8.0	315 41 35.8	3 14 43.5	4 0 21.8	0 55 46.3	13 48 46.3	1 50 44.4
8.5	321 56 0.7	2 48 21.7	10 41 53.3	1 31 17.8	20 43 36.3	2 25 45.5
9.0	328 12 54.5	2 19 44.1	17 26 28.3	2 5 50.5	27 41 2.7	2 58 50.4
9.5	334 32 30.1	1 49 8.3	24 14 9.8	2 38 53.4	34 40 45.4	3 29 25.5
10.0	340 55 2.7	1 16 53.8	31 5 0.7	3 9 55.8	41 42 24.1	3 56 59.7
10.5	347 20 49.0	0 43 21.8	37 59 2.8	3 38 27.5	48 45 38.5	4 21 4.5
11.0	353 50 7.9	+0 8 55.6	44 56 15.9	4 3 59.6	65 50 8.6	4 41 15.2
11.5	0 23 19.2	−0 26 0.1	51 56 37.5	4 26 4.9	62 55 34.9	4 57 10.9
12.0	7 0 42.9	1 0 58.4	59 0 1.7	4 44 18.4	70 1 38.3	5 8 35.4
12.5	13 42 39.0	1 35 31.3	66 6 18.5	4 58 18.3	77 8 0.3	5 15 17.2
13.0	20 29 25.6	2 9 8.8	73 15 12.7	5 7 46.4	84 14 22.8	5 17 9.8
13.5	27 21 17.8	2 41 19.9	80 26 23.9	5 12 28.7	91 20 27.9	5 14 11.7
14.0	34 18 26.3	3 11 32.4	87 39 26.5	5 12 16.5	98 25 57.7	5 6 26 7
14.5	41 20 55.9	3 39 13.8	94 53 48.7	5 7 6.3	105 30 34.7	4 54 3.2
15.0	48 28 43.5	4 3 51.4	102 8 54.4	4 57 1.3	112 34 1.0	4 37 14.6
15.5	55 41 37.3	4 24 54.1	109 24 2.6	4 42 10.7	119 35 58.7	4 16 18.9
16.0	62 59 15.0	4 41 52.8	116 38 29.8	4 22 50.2	126 36 9.9	3 51 38.2
16.5	70 21 3.5	4 54 21.8	123 51 30.8	3 59 21.5	133 34 16.4	3 23 38.0
17.0	77 46 19.0	5 2 0.7	131 2 20.4	3 32 11.7	140 30 0.6	2 52 47.3
17.5	85 14 7.7	5 4 34.6	138 10 15.1	3 1 52.4	147 23 5.0	2 19 37.2
18.0	92 43 27.3	5 1 56.6	145 14 35.0	2 28 58.2	154 13 12.6	1 44 40.6
18.5	100 13 9.5	4 54 7.4	152 14 44.7	1 54 6.1	161 0 7.8	1 8 31.1
19.0	107 42 2.6	4 41 16.2	159 10 14.5	1 17 53.5	167 43 36.5	−0 31 42.6
19.5	115 8 54.9	4 23 40.4	166 0 41.4	0 40 57.5	174 23 26.3	+0 5 12.0
20.0	122 32 37.7	4 1 44.4	172 45 49.6	−0 3 53.4	180 59 27.5	0 41 40.9
20.5	129 52 8.5	3 35 59.0	179 25 30.1	+0 32 45.7	187 31 33.0	1 17 14.6
21.0	137 6 33.4	3 6 50.1	185 59 41.6	1 8 29.8	193 59 39.2	1 51 26.1
21.5	144 15 8.7	2 35 22.4	192 28 29.1	1 42 52.5	200 23 45.5	2 23 51.1
22.0	151 17 21 9	2 1 47.5	198 52 3.7	2 15 30.5	206 43 55.3	2 54 8.5
22.5	158 12 52.1	1 26 52.6	205 10 42.2	2 46 4.2	213 0 15.5	3 22 0.3
23.0	165 1 29.6	0 51 14.2	211 24 46.0	3 14 16.8	219 12 56.8	3 47 11.4
23.5	171 43 15.2	−0 15 25.9	217 34 40.8	3 39 54.8	225 22 13.5	4 9 29.5
24.0	178 18 18.9	+0 20 1.6	223 40 55.5	4 2 46.8	231 28 23.3	4 28 45.1
24.5	184 46 58.9	0 54 41.1	229 44 1.8	4 22 43.9	237 31 47.2	4 44 50.7
25.0	191 9 39.8	1 28 8.9	235 44 33.0	4 39 38.8	243 32 49.4	4 57 40.9
25.5	197 26 51.3	2 0 4.3	241 43 4.4	4 53 25.7	249 31 56.6	5 7 12.0
26.0	203 39 6.8	2 30 9.8	247 40 11.7	5 3 59.7	255 29 37.9	5 13 21.4
26.5	209 47 2.6	2 58 10.2	253 36 30.8	5 11 16.9	261 26 24 6	5 16 8.0
27.0	215 51 16.8	3 23 52.4	259 32 37.5	5 15 14.4	267 22 49.5	5 15 31.3
27.5	221 52 28.0	3 47 5.5	265 29 7.1	5 15 49.8	273 19 26.4	5 11 32.1
28.0	227 51 15.2	4 7 39.5	271 26 33.5	5 13 1.7	279 16 50.1	5 4 11.7
28.5	233 48 16.5	4 25 26.0	277 25 29.1	5 6 49.4	285 15 35.9	4 53 32.1
29.0	239 44 8.7	4 40 17.4	283 26 24.1	4 57 13.3	291 16 19.1	4 39 36.6
29.5	245 39 26.9	4 52 6.8	289 29 46.8	4 44 14.9	297 19 34.6	4 22 28.9
30.0	251 34 44.1	5 0 48.3	295 36 2.5	4 27 57.3	303 25 55 8	4 2 14.8
30.5	257 30 30.9	5 6 16.8	301 45 33.3	4 8 25.6	309 35 54.5	3 39 1.2
31.0	263 27 15.1	5 8 28.0	307 58 38.4	3 45 47.0	315 50 0.2	3 12 57.0
31.5	269 25 21.7	+5 7 18.5	314 15 32.8	+3 20 11.2	322 8 39.4	+2 44 14.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	328° 32′ 14″.6	+2° 13′ 6″.6	3° 0′ 31″.1	—0° 56′ 24″.7	54° 23′ 53″.0	—4° 31′ 48″.3
1.5	335 1 4.1	1 39 52.2	9 55 36.5	1 32 34.1	61 56 12.9	4 46 20.5
2.0	341 35 20.3	1 4 51.7	16 57 20.2	2 7 51.3	69 31 52.7	4 55 56.2
2.5	348 15 10.1	+0 28 30.1	24 5 23.9	2 41 38.0	77 9 31.8	5 0 18.5
3.0	355 0 33.2	—0 8 44.3	31 19 18.0	3 13 14.4	84 47 45.5	4 59 19.7
3.5	1 51 22.5	0 46 19.6	38 38 21.6	3 42 1.1	92 25 7.9	4 53 1.3
4.0	8 47 23.4	1 23 40.8	46 1 43.3	4 7 20.4	100 0 17.4	4 41 34.1
4.5	15 48 13.9	2 0 10.3	53 28 23.3	4 28 38.2	107 31 58.8	4 25 17.1
5.0	22 53 25.0	2 35 9.8	60 57 15.0	4 45 25.7	114 59 7.6	4 4 36.6
5.5	30 2 21.8	3 8 0.5	68 27 8.1	4 57 20.9	122 20 51.3	3 40 4.3
6.0	37 14 24.0	3 38 5.1	75 56 51.6	5 4 9.3	129 36 30.7	3 12 15.4
6.5	44 28 47.6	4 4 48.8	83 25 16.7	5 5 45.0	136 45 40.3	2 41 46.7
7.0	51 44 46.0	4 27 40.8	90 51 19.9	5 2 10.1	143 48 7.1	2 9 15.6
7.5	59 1 32.2	4 46 15.2	98 14 5.6	4 53 34.6	150 43 49.4	1 35 18.4
8.0	66 18 20.4	5 0 12.1	105 32 47.5	4 40 14.9	157 32 55.4	1 0 29.6
8.5	73 34 27.1	5 9 17.9	112 46 49.6	4 22 33.3	164 15 40.5	—0 25 21.4
9.0	80 49 12.9	5 13 25.5	119 55 46.6	4 0 56.1	170 52 26.4	+0 9 36.4
9.5	88 2 3.0	5 12 34.3	126 59 23.0	3 35 52.5	177 23 38.6	0 43 57.1
10.0	95 12 28.5	5 6 49.8	133 57 33.0	3 7 53.7	183 49 45.1	1 17 16.4
10.5	102 20 5.9	4 56 22.8	140 50 18.4	2 37 31.5	190 11 15.3	1 49 12.7
11.0	109 24 37.4	4 41 28.9	147 37 47.5	2 5 17.6	196 28 38.7	2 19 26.7
11.5	116 25 50.5	4 22 27.8	154 20 13.8	1 31 43.1	202 42 24.1	2 47 41.1
12.0	123 23 37.5	3 59 42.4	160 57 54.2	0 57 18.1	208 52 59.1	3 13 40.7
12.5	130 17 54.8	3 33 38.6	167 31 7.8	—0 22 31.3	215 0 49.5	3 37 12.2
13.0	137 8 41.9	3 4 43.7	174 0 14.9	+0 12 9.8	221 6 18.5	3 58 3.7
13.5	143 56 0.5	2 33 26.7	180 25 35.9	0 46 19.6	227 9 47.5	4 16 5.0
14.0	150 39 54.3	2 0 17.7	186 47 30.7	1 19 34.1	233 11 35.1	4 31 7.7
14.5	157 20 27.8	1 25 46.7	193 6 18.1	1 51 30.8	239 11 57.7	4 43 4.9
15.0	163 57 46.2	0 50 24.1	199 22 15.1	2 21 49.1	245 11 9.9	4 51 51.4
15.5	170 31 54.4	—0 14 39.6	205 35 37.2	2 50 10.3	251 9 24.3	4 57 23.5
16.0	177 2 56.8	+0 20 57.8	211 46 37.6	3 16 17.5	257 6 52.3	4 59 39.2
16.5	183 30 57.6	0 56 0.4	217 55 28.0	3 39 55.6	263 3 44.4	4 58 38.4
17.0	189 56 0.1	1 30 2.0	224 2 18.7	4 0 51.5	269 0 10.8	4 54 22.3
17.5	196 18 7.4	2 2 38.1	230 7 18.7	4 18 54.2	274 56 21.9	4 46 54.0
18.0	202 37 22.5	2 33 26.3	236 10 36.1	4 33 54.8	280 52 28.4	4 36 18.1
18.5	208 53 48.5	3 2 6.6	242 12 19.0	4 45 46.4	286 48 42.3	4 22 41.0
19.0	215 7 29.1	3 28 21.6	248 12 35.6	4 54 23.9	292 45 17.1	4 6 10.4
19.5	221 18 29.0	3 51 56.1	254 11 35.1	4 59 44.0	298 42 28.1	3 46 55.3
20.0	227 26 54.5	4 12 37.6	260 9 27.6	5 1 45.6	304 40 32.6	3 25 6.1
20.5	233 32 53.6	4 30 16.2	266 6 25.2	5 0 29.2	310 39 50.5	3 0 54.6
21.0	239 36 36.6	4 44 44.2	272 2 41.8	4 55 57.0	316 40 44.2	2 34 33.6
21.5	245 38 15.9	4 55 56.1	277 58 33.6	4 48 12.8	322 43 38.6	2 6 17.2
22.0	251 38 6.8	5 3 48.5	283 54 19.4	4 37 21.4	328 49 1.2	1 36 20.6
22.5	257 36 27.0	5 8 19.6	289 50 20.5	4 23 28.9	334 57 21.9	1 5 0.5
23.0	263 33 37.2	5 9 29.1	295 47 1.3	4 6 42.6	341 9 11.9	+0 32 34.9
23.5	269 30 0.7	5 7 18.4	301 44 48.8	3 47 10.7	347 25 4.0	—0 0 36.7
24.0	275 26 3.7	5 1 49.5	307 44 12.6	3 25 2.6	353 45 31.8	0 34 13.2
24.5	281 22 14.6	4 53 5.8	313 45 44.7	3 0 28.6	0 11 8.5	1 7 51.3
25.0	287 19 4.4	4 41 11.6	319 49 59.3	2 33 40.2	6 42 26.5	1 41 6.3
25.5	293 17 6.0	4 26 11.9	325 57 32.1	2 4 50.4	13 19 55.4	2 13 30.9
26.0	299 16 53.9	4 8 12.7	332 9 0.0	1 34 13.7	20 4 0.5	2 44 36.1
26.5	305 19 4.0	3 47 21.0	338 25 0.0	1 2 6.4	26 55 1.2	3 13 50.9
27.0	311 24 12.9	3 23 45.2	344 46 8.8	+0 28 46.8	33 53 9.6	3 40 42.8
27.5	317 32 57.4	2 57 34.8	351 13 1.3	—0 5 24.1	40 58 27.9	4 4 38.7
28.0	323 45 53.7	2 29 1.4	357 46 9.8	0 40 2.8	48 10 46.9	4 25 5.6
28.5	330 3 36.8	1 58 18.6	4 26 2.1	1 14 42.8	55 29 44.5	4 41 31.8
29.0	336 26 39.4	1 25 42.5	11 13 0.2	1 48 54.6	62 54 44.7	4 53 28.7
29.5	342 55 30.7	0 51 32.0	18 7 18.0	2 22 5.8	70 24 58.1	5 0 32.5
30.0	349 30 35.2	+0 16 9.5	25 8 59.4	2 53 41.4	77 59 21.9	5 2 25.4
30.5	356 12 11.5	—0 19 59.2	32 17 57.0	3 23 4.6	85 36 42.9	4 58 57.8
31.0	3 0 31.1	0 56 24.7	39 33 50.3	3 49 37.7	93 15 39.6	4 50 9.0
31.5	9 56 36.5	—1 32 34.1	46 56 5.1	—4 12 43.9	100 54 46.3	—4 36 7.8

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	93° 15′ 39″.6	−4° 50′ 9″.0	146° 43′ 56″.4	−1° 36′ 9″.4	196° 36′ 48″.0	+2° 49′ 54″.6
1.5	100 54 46.3	4 36 7.8	153 58 23.8	0 57 57.7	203 13 1.9	3 19 36.3
2.0	108 32 37.0	4 17 12.2	161 6 49.1	−0 19 20.4	209 43 37.2	3 46 16.3
2.5	116 7 49.4	3 53 48.6	168 8 47.6	+0 19 2.2	216 8 47.5	4 9 42.2
3.0	123 39 8.4	3 26 30.5	175 4 5.8	0 56 33.4	222 28 51.3	4 29 44.9
3.5	131 5 29.4	2 55 56.1	181 52 40.2	1 32 41.0	228 44 11.6	4 46 18.8
4.0	138 26 0.4	2 22 46.7	188 34 36.2	2 6 57.3	234 55 15.0	4 59 20.6
4.5	145 40 2.3	1 47 44.7	195 10 7.3	2 38 59.3	241 2 31.0	5 8 49.3
5.0	152 47 9.7	1 11 31.6	201 39 33.0	3 8 28.2	247 6 31.1	5 14 45.5
5.5	159 47 10.0	−0 34 46.7	208 3 18.0	3 35 9.3	253 7 48.5	5 17 10.9
6.0	166 40 2.3	+0 1 53.7	214 21 50.6	3 58 50.8	259 6 57.1	5 16 8.3
6.5	173 25 55.4	0 37 57.0	220 35 42.0	4 19 24.0	265 4 31.5	5 11 41.5
7.0	180 5 6.3	1 12 54.6	226 45 25.1	4 36 42.5	271 1 6.0	5 3 55.1
7.5	186 37 58.2	1 46 21.7	232 51 33.6	4 50 41.9	276 57 14.3	4 52 54.3
8.0	193 4 58.8	2 17 57.0	238 54 41.3	5 1 19.4	282 53 29.4	4 38 45.2
8.5	199 26 38.8	2 47 22.5	244 55 21.5	5 8 33.3	288 50 22.7	4 21 34.7
9.0	205 43 30.7	3 14 23.1	250 54 6.8	5 12 23.2	294 48 24.2	4 1 30.9
9.5	211 56 7.9	3 38 46.3	256 51 28.5	5 12 49.8	300 48 1.9	3 38 43.2
10.0	218 5 3.4	4 0 21.5	262 47 56.1	5 9 54.5	306 49 41.6	3 13 22.3
10.5	224 10 49.5	4 19 0.1	268 43 57.3	5 3 39.9	312 53 46.6	2 45 40.8
11.0	230 13 56.9	4 34 35.3	274 39 57.7	4 54 9.8	319 0 37.3	2 15 53.2
11.5	236 14 54.7	4 47 1.4	280 36 20.9	4 41 28.9	325 10 31.6	1 44 15.9
12.0	242 14 9.6	4 56 14.1	286 33 28.5	4 25 43.5	331 23 43.9	1 11 7.7
12.5	248 12 6.4	5 2 10.5	292 31 39.6	4 7 1.2	337 40 26.1	0 36 49.6
13.0	254 9 7.1	5 4 49.0	298 31 11.5	3 45 31.1	344 0 46.4	+0 1 44.9
13.5	260 5 31.8	5 4 9.3	304 32 19.7	3 21 24.1	350 24 50.4	−0 33 41.1
14.0	266 1 38.2	5 0 12.2	310 35 17.8	2 54 53.0	356 52 40.2	1 9 1.5
14.5	271 57 42.3	4 53 0.1	316 40 18.2	2 26 12.6	3 24 15.3	1 43 47.5
15.0	277 53 58.3	4 42 37.0	322 47 31.8	1 55 39.4	9 59 32.4	2 17 29.6
15.5	283 50 39.0	4 29 8.4	328 57 8.5	1 23 31.8	16 38 26.0	2 49 37.9
16.0	289 47 56.6	4 12 41.4	335 9 17.8	0 50 10.3	23 20 48.4	3 19 42.2
16.5	295 46 2.4	3 53 24.8	341 24 8.6	+0 15 56.7	30 6 30.4	3 47 13.7
17.0	301 45 8.0	3 31 29.0	347 41 49.9	−0 18 45.5	36 55 21.2	4 11 44.6
17.5	307 45 25.1	3 7 6.2	354 2 30.8	0 53 31.5	43 47 8.7	4 32 49.5
18.0	313 47 6.2	2 40 29.9	0 26 20.4	1 27 55.6	50 41 40.4	4 50 5.4
18.5	319 50 24.6	2 11 55.2	6 53 28.5	2 1 31.1	57 38 42.7	5 3 12.5
19.0	325 55 35.5	1 41 39.0	13 24 4.8	2 33 50.8	64 38 1.8	5 11 55.0
19.5	332 2 55.3	1 9 59.2	19 58 19.0	3 4 27.3	71 39 23.2	5 16 0.9
20.0	338 12 42.4	0 37 15.2	26 36 20.7	3 32 53.3	78 42 32.2	5 15 22.8
20.5	344 25 16.9	+0 3 47.6	33 18 18.3	3 58 42.0	85 47 13.6	5 9 57.9
21.0	350 41 0.8	−0 30 1.8	40 4 19.1	4 21 27.5	92 53 11.5	4 59 48.4
21.5	357 0 17.3	1 3 50.0	46 54 28.1	4 40 45.0	100 0 9.1	4 45 1.6
22.0	3 23 30.6	1 37 12.8	53 48 47.8	4 56 11.3	107 7 48.5	4 25 49.7
22.5	9 51 5.0	2 9 44.9	60 47 17.2	5 7 25.9	114 15 50.5	4 2 30.0
23.0	16 23 24.7	2 40 59.9	67 49 51.2	5 14 11.1	121 23 54.9	3 35 24.4
23.5	23 0 52.2	3 10 30.5	74 56 19.4	5 16 12.8	128 31 40.1	3 4 59.4
24.0	29 43 47.9	3 37 48.6	82 6 26.1	5 13 21.4	135 38 42.8	2 31 45.5
24.5	36 32 28.3	4 2 25.8	89 19 49.2	5 5 32.6	142 44 38.5	1 56 16.4
25.0	43 27 4.9	4 23 53.6	96 36 0.2	4 52 47.7	149 49 1.7	1 19 8.1
25.5	50 27 42.6	4 41 44.1	103 54 24.7	4 35 14.6	156 51 26.1	0 40 58.5
26.0	57 34 18.2	4 55 31.1	111 14 22.3	4 13 7.6	163 51 25.4	−0 2 25.7
26.5	64 46 39.1	5 4 50.7	118 35 8.6	3 46 48.0	170 48 33.9	+0 35 52.2
27.0	72 4 22.3	5 9 22.9	125 55 55.0	3 16 43.3	177 42 26.7	1 13 19.0
27.5	79 26 53.7	5 8 52.6	133 15 51.3	2 43 26.7	184 32 41.1	1 49 21.0
28.0	86 53 28.5	5 3 11.0	140 34 6.6	2 7 36.0	191 18 57.4	2 23 27.5
28.5	94 23 11.7	4 52 16.7	147 49 51.4	1 29 52.1	198 0 59.0	2 55 11.8
29.0	101 55 0.2	4 36 16.5	155 2 19.7	0 50 57.8	204 38 33.9	3 24 11.2
29.5	109 27 44.6	4 15 25.8	162 10 49.4	−0 11 35.8	211 11 34.3	3 50 7.2
30.0	117 0 12.3	3 50 8.1	169 14 44.8	+0 27 32.6	217 39 57.3	4 12 45.8
30.5	124 31 10.2	3 20 54.4	176 13 36.3	1 5 48.5	224 3 45.2	4 31 56.7
31.0	131 59 28.4	2 48 21.9	183 7 2.3	1 42 37.1	230 23 5.4	4 47 33.4
31.5	139 24 2.5	−2 13 12.3	189 54 48.4	+2 17 27.8	236 38 10.1	+4 59 32.6

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	230° 23′ 5″.4	+4° 47′ 33″.4	274° 56′ 38″.5	+4° 42′ 39″.5	306° 46′ 58″.8	+2° 43′ 10″.2
1.5	236 38 10.1	4 59 32.6	280 53 17.1	4 29 5.6	312 41 15.3	2 16 7.9
2.0	242 49 15.8	5 7 53.4	286 48 45.3	4 12 39.9	318 36 35.2	1 47 30.7
2.5	248 56 43.3	5 12 37.4	292 43 35.8	3 53 32.8	324 33 35.9	1 17 33.5
3.0	255 0 57.1	5 13 47.8	298 38 24.1	3 31 55.0	330 32 57.1	0 46 32.0
3.5	261 2 25.0	5 11 29.2	304 33 47.4	3 7 57.8	336 35 19.5	+0 14 42.8
4.0	267 1 37.6	5 5 47.4	310 30 25.0	2 41 53.1	342 41 25.0	—0 17 36.4
4.5	272 59 7.4	4 56 48.9	316 28 56.8	2 13 53.7	348 51 55.0	0 50 6.5
5.0	278 55 29.3	4 44 40.8	322 30 3.2	1 44 13.2	355 7 30.3	1 22 26.7
5.5	284 51 19.0	4 29 30.9	328 34 24.6	1 13 6.5	1 28 49.4	1 54 14.2
6.0	290 47 13.3	4 11 27.7	334 42 40.3	0 40 50.1	7 56 27.4	2 25 4.3
6.5	296 43 49.4	3 50 40.2	340 55 27.3	+0 7 42.4	14 30 54.5	2 54 30.4
7.0	302 41 44.1	3 27 18.2	347 13 20.3	—0 25 56.3	21 12 34.3	3 22 3.6
7.5	308 41 33.6	3 1 32.7	353 36 49.7	0 59 43.3	28 1 42.1	3 47 13.8
8.0	314 43 52.7	2 33 35.8	0 6 20.9	1 33 13.2	34 58 22.9	4 9 29.8
8.5	320 49 14.4	2 3 41.2	6 42 13.0	2 5 58.4	42 2 30.0	4 28 20.4
9.0	326 58 9.3	1 32 4.5	13 24 37.3	2 37 29.1	49 13 44.1	4 43 15.7
9.5	333 11 4.7	0 59 3.3	20 13 36.5	3 7 13.4	56 31 32.2	4 53 48.4
10.0	339 28 24.2	+0 24 57.4	27 9 3.4	3 34 38.4	63 55 7.8	4 59 35.7
10.5	345 50 27.2	—0 9 50.7	34 10 40.3	3 59 11.2	71 23 32.0	5 0 20.5
11.0	352 17 27.8	0 44 56.1	41 17 59.2	4 20 19.4	78 55 35.6	4 55 53.3
11.5	358 49 35.0	1 19 51.6	48 30 21.8	4 37 33.5	86 30 2.0	4 46 13.0
12.0	5 26 51.1	1 54 7.7	55 47 0.2	4 50 27.5	94 5 30.2	4 31 27.9
12.5	12 9 12.5	2 27 13.2	63 6 59.1	4 58 40.7	101 40 38.9	4 11 54.5
13.0	18 56 28.7	2 58 36.0	70 29 17.7	5 1 58.7	109 14 10.1	3 47 58.1
13.5	25 48 22.9	3 27 43.4	77 52 52.8	5 0 14.6	116 44 52.7	3 20 10.7
14.0	32 44 32.0	3 54 3.7	85 16 41.0	4 53 28.7	124 11 45.2	2 49 9.1
14.5	39 44 27.7	4 17 6.9	92 39 41.5	4 41 49.3	131 33 57.2	2 15 33.8
15.0	46 47 37.3	4 36 25.4	100 0 59.4	4 25 31.5	138 50 50.8	1 40 6.3
15.5	53 53 24.6	4 51 35.9	107 19 47.0	4 4 56.6	146 2 0.3	1 3 27.9
16.0	61 1 12.1	5 2 19.4	114 35 24.7	3 40 31.2	153 7 11.8	—0 26 18.3
16.5	68 10 21.4	5 8 22.2	121 47 22.2	3 12 45.6	160 6 21.6	+0 10 45.3
17.0	75 20 15.4	5 9 36.8	128 55 19.0	2 42 12.7	166 59 34.8	0 47 9.1
17.5	82 30 19.3	5 6 1.0	135 59 3.0	2 9 26.8	173 47 3.6	1 22 22.7
18.0	89 40 1.5	4 57 38.7	142 58 29.7	1 35 2.4	180 29 4.9	1 55 59.2
18.5	96 48 54.7	4 44 39.3	149 53 40.4	0 59 34.1	187 5 59.6	2 27 35.3
19.0	103 56 35.4	4 27 17.1	156 44 41.9	—0 23 35.2	193 38 10.3	2 56 51.1
19.5	111 2 45.0	4 5 51.4	163 31 43.9	+0 12 22.4	200 6 0.6	3 23 29.5
20.0	118 7 9.0	3 40 44.9	170 14 58.7	0 47 48.4	206 29 53.6	3 47 16.2
20.5	125 9 36.4	3 12 24.1	176 54 39.3	1 22 14.4	212 50 11.7	4 7 59.6
21.0	132 9 59.5	2 41 17.6	183 30 58.4	1 56 14.4	219 7 15.7	4 25 30.3
21.5	139 8 12.7	2 7 56.5	190 4 8.2	2 26 24.5	225 21 24.5	4 39 41.1
22.0	146 4 12.1	1 32 53.2	196 34 19.2	2 55 23.1	231 32 55.1	4 50 27.1
22.5	152 57 54.4	0 56 40.7	203 1 40.4	3 21 51.0	237 42 2.3	4 57 45.4
23.0	159 49 16.7	—0 19 52.6	209 26 18.9	3 45 31.7	243 48 58.8	5 1 34.9
23.5	166 38 15.4	+0 16 57.8	215 48 19.8	4 6 11.1	249 53 56.0	5 1 56.5
24.0	173 24 45.8	0 53 18.1	222 7 46.4	4 23 37.9	255 57 3.2	4 58 53.1
24.5	180 8 42.3	1 28 37.2	228 24 40.4	4 37 43.4	261 58 29.3	4 52 29.5
25.0	186 49 58.2	2 2 26.0	234 39 3.2	4 48 21.8	267 58 22.5	4 42 52.1
25.5	193 28 25.8	2 34 17.8	240 50 56.0	4 55 29.8	273 56 51.0	4 30 9.0
26.0	200 3 56.6	3 3 48.3	247 0 20.2	4 59 6.7	279 54 3.7	4 14 29.9
26.5	206 36 21.8	3 30 36.6	253 7 18.5	4 59 14.2	285 50 10.4	3 56 5.9
27.0	213 5 33.5	3 54 25.3	259 11 55.0	4 55 56.2	291 45 22.4	3 35 9.3
27.5	219 31 24.7	4 15 0.4	265 14 16.2	4 49 18.7	297 39 52.9	3 11 53.6
28.0	225 53 50.5	4 32 11.2	271 14 31.2	4 39 29.5	303 33 57.6	2 46 33.2
28.5	232 12 48.0	4 45 50.7	277 12 51.9	4 26 37.6	309 27 53.9	2 19 23.2
29.0	238 28 17.8	4 55 54.8	283 9 33.8	4 10 53.3	315 22 3.2	1 50 39.4
29.5	244 40 23.6	5 2 22.6	289 4 55.7	3 52 28.0	221 16 48.8	1 20 38.3
30.0	250 49 13.3	5 5 15.7	294 59 19.5	3 31 33.8	327 12 37.3	0 49 36.6
30.5	256 54 58.2	5 4 37.8	300 53 10.9	3 8 23.5	333 9 57.7	+0 17 51.8
31.0	262 57 53.9	5 0 34.3	306 46 58.8	2 43 10.2	339 9 22.2	—0 14 18.0
31.5	268 58 19.6	+4 53 12.1	312 41 15.3	+2 16 7.9	345 11 24.7	—0 46 34.0

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1867.	23° 27′						
Jan. 0	13″.26	—0″.36	—0s.02	0″.00	-20″.80	8.72	177° 25′.7
10	13.35	0.10	0.01	1.38	20.79	8.72	176 53.9
20	13.50	0.05	0.00	2.75	20.77	8.72	176 22.1
30	13.67	0.05	0.00	4.13	20.74	8.71	175 50.4
Feb. 9	13.86	0.10	0.01	5.50	20.71	8.69	175 18.6
19	14.04	0.40	0.03	6.88	20.67	8.67	174 46.8
Mar. 1	14.18	0.85	0.05	8.26	20.63	8.65	174 15.0
11	14.27	1.39	0.08	9.63	20.57	8.63	173 43.3
21	14.30	1.98	0.12	11.01	20.51	8.61	173 11.5
31	14.26	2.57	0.16	12.38	20.45	8.58	172 39.8
Apr. 10	14.17	3.10	0.19	13.76	20.39	8.56	172 8.0
20	14.02	3.55	0.22	15.14	20.34	8.53	171 36.2
30	13.85	3.86	0.24	16.51	20.29	8.51	171 4.4
May 10	13.67	4.04	0.25	17.89	20.24	8.49	170 32.7
20	13.50	4.08	0.25	19.26	20.19	8.47	170 0.9
30	13.35	4.00	0.25	20.64	20.16	8.46	169 29.1
June 9	13.26	3.83	0.24	22.02	20.13	8.45	168 57.3
19	13.22	3.61	0.22	23.39	20.11	8.44	168 25.5
29	13.24	3.38	0.21	24.77	20.11	8.44	167 53.8
July 9	13.32	3.18	0.20	26.14	20.10	8.44	167 22.0
19	13.46	3.06	0.19	27.52	20.12	8.44	166 50.2
29	13.62	3.05	0.19	28.89	20.14	8.45	166 18.4
Aug. 8	13.81	3.16	0.19	30.27	20.17	8.46	165 46.7
18	14.00	3.42	0.21	31.65	20.20	8.48	165 14.9
28	14.17	3.80	0.23	33.02	20.24	8.50	164 43.2
Sept. 7	14.30	4.29	0.26	34.40	20.29	8.52	164 11.4
17	14.38	4.85	0.30	35.77	20.35	8.54	163 39.6
27	14.39	5.45	0.33	37.15	20.41	8.56	163 7.8
Oct. 7	14.35	6.01	0.37	38.53	20.47	8.59	162 36.1
17	14.24	6.51	0.40	39.90	20.53	8.61	162 4.3
27	14.10	6.90	0.42	41.28	20.59	8.64	161 32.5
Nov. 6	13.92	7.13	0.44	42.65	20.64	8.66	161 0.7
16	13.75	7.21	0.44	44.03	20.69	8.68	160 29.0
26	13.60	7.14	0.44	45.41	20.73	8.70	159 57.2
Dec. 6	13.49	6.93	0.43	46.78	20.76	8.71	159 25.4
16	13.43	6.64	0.41	48.16	20.78	8.72	158 53.7
26	13.45	6.31	0.39	49.53	20.79	8.72	158 21.9
36	13.53	—6.01	—0.37	50.91	-20.78	8.72	157 50.1

Mean Obliquity, 1867.0, ... 23° 27′ 23″.095
Precession for 1867.5, ... 50.2564
Log. Precession in a Sidereal Day, ... 9.13741
Log. Precession in a Solar Day, ... 9.13860

Daily Motion.
3′.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	−7.3974	+0.9921	−0.5690	+1.3019	Mar. 1	+9.1705	+0.9460	−1.2493	+0.8190
2	+6.9345	0.9917	0.6056	1.3003	2	9.1756	0.9453	1.2518	0.7960
3	7.6170	0.9913	0.6394	1.2985	3	9.1805	0.9448	1.2542	0.7717
4	7.8692	0.9909	0.6704	1.2967	4	9.1853	0.9442	1.2564	0.7457
5	8.0265	0.9904	0.6994	1.2946	5	9.1901	0.9436	1.2585	0.7180
6	+8.1411	+0.9899	−0.7264	+1.2924	6	+9.1947	+0.9431	−1.2604	+0.6882
7	8.2315	0.9894	0.7516	1.2900	7	9.1992	0.9427	1.2622	0.6562
8	8.3058	0.9889	0.7754	1.2875	8	9.2037	0.9422	1.2638	0.6215
9	8.3690	0.9883	0.7978	1.2848	9	9.2081	0.9418	1.2653	0.5835
10	8.4241	0.9877	0.8189	1.2820	10	9.2124	0.9414	1.2667	0.5418
11	+8.4726	+0.9871	−0.8390	+1.2790	11	+9.2166	+0.9410	−1.2680	+0.4955
12	8.5159	0.9865	0.8580	1.2757	12	9.2208	0.9407	1.2691	0.4437
13	8.5550	0.9858	0.8760	1.2726	13	9.2249	0.9404	1.2701	0.3847
14	8.5905	0.9852	0.8934	1.2691	14	9.2289	0.9401	1.2709	0.3164
15	8.6230	0.9844	0.9098	1.2655	15	9.2329	0.9399	1.2716	0.2350
16	+8.6531	+0.9837	−0.9255	+1.2617	16	+9.2369	+0.9397	−1.2722	+0.1351
17	8.6810	0.9830	0.9405	1.2577	17	9.2408	0.9395	1.2726	0.0048
18	8.7069	0.9822	0.9549	1.2536	18	9.2447	0.9394	1.2729	9.8169
19	8.7312	0.9814	0.9686	1.2493	19	9.2485	0.9393	1.2731	+9.4800
20	8.7540	0.9806	0.9819	1.2448	20	9.2523	0.9392	1.2731	−8.7160
21	+8.7755	+0.9798	−0.9946	+1.2401	21	+9.2560	+0.9392	−1.2731	−9.6085
22	8.7958	0.9790	1.0068	1.2352	22	9.2597	0.9392	1.2728	9.8802
23	8.8149	0.9781	1.0185	1.2302	23	9.2634	0.9392	1.2725	0.0461
24	8.8331	0.9773	1.0298	1.2249	24	9.2671	0.9393	1.2720	0.1658
25	8.8503	0.9764	1.0407	1.2194	25	9.2708	0.9394	1.2714	0.2594
26	+8.8666	+0.9755	−1.0512	+1.2138	26	+9.2744	+0.9395	−1.2707	−0.3361
27	8.8822	0.9746	1.0612	1.2079	27	9.2780	0.9396	1.2698	0.4011
28	8.8971	0.9737	1.0709	1.2018	28	9.2816	0.9398	1.2688	0.4576
29	8.9113	0.9728	1.0803	1.1955	29	9.2852	0.9400	1.2677	0.5073
30	8.9250	0.9718	1.0893	1.1889	30	9.2888	0.9403	1.2665	0.5518
31	+8.9382	+0.9709	−1.0981	+1.1821	31	+9.2924	+0.9405	−1.2650	−0.5922
Feb. 1	8.9507	0.9699	1.1065	1.1751	Apr. 1	9.2959	0.9408	1.2635	0.6289
2	8.9627	0.9690	1.1146	1.1678	2	9.2995	0.9412	1.2619	0.6626
3	8.9742	0.9681	1.1224	1.1603	3	9.3030	0.9416	1.2601	0.6937
4	8.9853	0.9671	1.1300	1.1525	4	9.3066	0.9419	1.2582	0.7226
5	+8.9960	+0.9662	−1.1373	+1.1444	5	+9.3101	+0.9424	−1.2561	−0.7495
6	9.0063	0.9652	1.1443	1.1360	6	9.3137	0.9428	1.2539	0.7748
7	9.0162	0.9643	1.1510	1.1273	7	9.3173	0.9433	1.2515	0.7985
8	9.0258	0.9633	1.1576	1.1183	8	9.3209	0.9438	1.2491	0.8209
9	9.0351	0.9624	1.1639	1.1090	9	9.3244	0.9443	1.2465	0.8421
10	+9.0440	+0.9614	−1.1700	+1.0993	10	+9.3280	+0.9448	−1.2437	−0.8621
11	9.0526	0.9605	1.1759	1.0893	11	9.3316	0.9454	1.2408	0.8811
12	9.0610	0.9596	1.1816	1.0789	12	9.3352	0.9460	1.2377	0.8992
13	9.0690	0.9586	1.1870	1.0682	13	9.3389	0.9466	1.2346	0.9164
14	9.0768	0.9577	1.1922	1.0569	14	9.3425	0.9472	1.2312	0.9328
15	+9.0844	+0.9568	−1.1973	+1.0454	15	+9.3461	+0.9478	−1.2277	−0.9485
16	9.0917	0.9560	1.2021	1.0333	16	9.3498	0.9485	1.2241	0.9635
17	9.0989	0.9551	1.2068	1.0207	17	9.3535	0.9492	1.2203	0.9779
18	9.1058	0.9542	1.2113	1.0077	18	9.3572	0.9499	1.2163	0.9917
19	9.1125	0.9534	1.2156	0.9941	19	9.3609	0.9506	1.2122	1.0050
20	+9.1190	+0.9525	−1.2197	+0.9800	20	+9.3646	+0.9513	−1.2079	−1.0177
21	9.1254	0.9517	1.2236	0.9653	21	9.3683	0.9520	1.2034	1.0299
22	9.1315	0.9509	1.2274	0.9499	22	9.3721	0.9528	1.1988	1.0418
23	9.1375	0.9502	1.2310	0.9338	23	9.3758	0.9535	1.1940	1.0531
24	9.1434	0.9494	1.2344	0.9169	24	9.3796	0.9543	1.1890	1.0640
25	+9.1491	+0.9487	−1.2377	+0.8993	25	+9.3834	+0.9551	−1.1838	−1.0745
26	9.1546	0.9480	1.2408	0.8808	26	9.3872	0.9559	1.1785	1.0847
27	9.1601	0.9473	1.2438	0.8613	27	9.3910	0.9567	1.1729	1.0944
28	9.1654	0.9466	1.2466	0.8407	28	9.3949	0.9575	1.1672	1.1039
29	9.1705	0.9460	1.2493	0.8190	29	9.3987	0.9583	1.1613	1.1130
30	+9.1756	+0.9453	−1.2518	+0.7960	30	+9.4026	+0.9591	−1.1552	−1.1218
31	+9.1805	+0.9448	−1.2542	+0.7717	31	+9.4065	+0.9599	−1.1488	−1.1303

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	+9.4065	+0.9599	−1.1488	−1.1303	July 1	+9.6369	+0.9825	+0.5045	−1.3042
2	9.4104	0.9607	1.1422	1.1385	2	9.6401	0.9822	0.5443	1.3029
3	9.4143	0.9615	1.1354	1.1465	3	9.6432	0.9818	0.5807	1.3015
4	9.4182	0.9623	1.1284	1.1542	4	9.6463	0.9813	0.6142	1.2999
5	9.4221	0.9631	1.1211	1.1616	5	9.6493	0.9809	0.6451	1.2982
6	+9.4260	+0.9639	−1.1136	−1.1687	6	+9.6524	+0.9804	+0.6739	−1.2964
7	9.4300	0.9647	1.1059	1.1756	7	9.6554	0.9799	0.7008	1.2945
8	9.4340	0.9655	1.0979	1.1823	8	9.6583	0.9794	0.7260	1.2924
9	9.4379	0.9663	1.0896	1.1888	9	9.6612	0.9788	0.7497	1.2902
10	9.4419	0.9671	1.0810	1.1950	10	9.6641	0.9783	0.7721	1.2878
11	+9.4459	+0.9679	−1.0720	−1.2010	11	+9.6670	+0.9777	+0.7933	−1.2854
12	9.4499	0.9687	1.0629	1.2069	12	9.6698	0.9770	0.8133	1.2828
13	9.4539	0.9694	1.0534	1.2125	13	9.6726	0.9764	0.8324	1.2800
14	9.4579	0.9702	1.0435	1.2179	14	9.6753	0.9757	0.8505	1.2771
15	9.4619	0.9709	1.0333	1.2231	15	9.6780	0.9750	0.8679	1.2741
16	+9.4659	+0.9717	−1.0228	−1.2282	16	+9.6807	+0.9743	+0.8844	−1.2709
17	9.4699	0.9724	1.0119	1.2333	17	9.6833	0.9736	0.9002	1.2676
18	9.4739	0.9731	1.0006	1.2377	18	9.6859	0.9729	0.9154	1.2642
19	9.4779	0.9738	0.9888	1.2423	19	9.6885	0.9721	0.9298	1.2606
20	9.4819	0.9744	0.9766	1.2466	20	9.6910	0.9713	0.9438	1.2568
21	+9.4859	+0.9751	−0.9639	−1.2508	21	+9.6935	+0.9705	+0.9571	−1.2529
22	9.4899	0.9758	0.9507	1.2548	22	9.6960	0.9697	0.9700	1.2488
23	9.4938	0.9764	0.9370	1.2587	23	9.6984	0.9688	0.9824	1.2446
24	9.4978	0.9770	0.9227	1.2624	24	9.7008	0.9680	0.9943	1.2402
25	9.5018	0.9776	0.9078	1.2659	25	9.7032	0.9671	1.0058	1.2356
26	+9.5058	+0.9782	−0.8923	−1.2693	26	+9.7055	+0.9662	+1.0169	−1.2309
27	9.5097	0.9787	0.8761	1.2726	27	9.7078	0.9653	1.0276	1.2260
28	9.5137	0.9792	0.8590	1.2755	28	9.7101	0.9644	1.0379	1.2209
29	9.5177	0.9797	0.8412	1.2786	29	9.7123	0.9635	1.0479	1.2156
30	9.5216	0.9802	0.8225	1.2815	30	9.7145	0.9626	1.0574	1.2102
31	+9.5255	+0.9807	−0.8028	−1.2841	31	+9.7167	+0.9617	+1.0667	−1.2045
June 1	9.5294	0.9812	0.7821	1.2867	Aug. 1	9.7188	0.9607	1.0757	1.1986
2	9.5333	0.9816	0.7601	1.2891	2	9.7209	0.9597	1.0844	1.1925
3	9.5372	0.9820	0.7370	1.2914	3	9.7230	0.9588	1.0928	1.1863
4	9.5411	0.9824	0.7124	1.2935	4	9.7250	0.9578	1.1010	1.1797
5	+9.5449	+0.9827	−0.6862	−1.2955	5	+9.7270	+0.9568	+1.1088	−1.1730
6	9.5487	0.9830	0.6582	1.2974	6	9.7290	0.9559	1.1164	1.1661
7	9.5526	0.9833	0.6282	1.2991	7	9.7309	0.9549	1.1238	1.1595
8	9.5564	0.9836	0.5957	1.3008	8	9.7328	0.9539	1.1309	1.1515
9	9.5602	0.9839	0.5605	1.3023	9	9.7347	0.9529	1.1378	1.1438
10	+9.5639	+0.9841	−0.5222	−1.3036	10	+9.7366	+0.9519	+1.1444	−1.1358
11	9.5677	0.9843	0.4800	1.3049	11	9.7384	0.9509	1.1509	1.1276
12	9.5714	0.9845	0.4331	1.3060	12	9.7402	0.9499	1.1571	1.1191
13	9.5751	0.9846	0.3804	1.3070	13	9.7419	0.9489	1.1631	1.1103
14	9.5787	0.9847	0.3204	1.3079	14	9.7436	0.9479	1.1689	1.1012
15	+9.5824	+0.9848	−0.2504	−1.3086	15	+9.7453	+0.9470	+1.1745	−1.0917
16	9.5860	0.9849	0.1670	1.3092	16	9.7470	0.9460	1.1799	1.0819
17	9.5896	0.9849	0.0637	1.3098	17	9.7487	0.9450	1.1852	1.0718
18	9.5932	0.9849	9.9279	1.3101	18	9.7503	0.9441	1.1903	1.0613
19	9.5967	0.9849	9.7284	1.3104	19	9.7519	0.9431	1.1952	1.0504
20	+9.6002	+0.9849	−9.3464	−1.3106	20	+9.7534	+0.9422	+1.1999	−1.0391
21	9.6037	0.9848	+8.9542	1.3106	21	9.7550	0.9413	1.2044	1.0273
22	9.6072	0.9847	9.6031	1.3105	22	9.7565	0.9403	1.2088	1.0151
23	9.6106	0.9846	9.8537	1.3103	23	9.7580	0.9394	1.2130	1.0024
24	9.6140	0.9844	0.0112	1.3099	24	9.7595	0.9385	1.2170	0.9892
25	+9.6174	+0.9842	+0.1261	−1.3095	25	+9.7609	+0.9377	+1.2209	−0.9754
26	9.6207	0.9840	0.2170	1.3089	26	9.7623	0.9368	1.2247	0.9611
27	9.6240	0.9838	0.2920	1.3082	27	9.7638	0.9360	1.2282	0.9462
28	9.6273	0.9835	0.3558	1.3074	28	9.7651	0.9351	1.2317	0.9305
29	9.6306	0.9832	0.4115	1.3064	29	9.7665	0.9343	1.2350	0.9142
30	+9.6338	+0.9829	+0.4605	−1.3055	30	+9.7679	+0.9335	+1.2381	−0.8970
31	+9.6369	+0.9825	+0.5045	−1.3042	31	+9.7692	+0.9327	+1.2411	−0.8790

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+9.7705	+0.9320	+1.2440	−0.8601	Nov. 1	+9.8428	+0.9397	+1.1616	+1.1126
2	9.7718	0.9313	1.2467	0.8402	2	9.8443	0.9406	1.1552	1.1217
3	9.7730	0.9306	1.2493	0.8192	3	9.8457	0.9414	1.1486	1.1305
4	9.7743	0.9299	1.2517	0.7970	4	9.8472	0.9422	1.1418	1.1390
5	9.7755	0.9292	1.2541	0.7735	5	9.8487	0.9430	1.1348	1.1472
6	+9.7768	+0.9286	+1.2562	−0.7485	6	+9.8502	+0.9438	+1.1275	+1.1553
7	9.7780	0.9280	1.2582	0.7217	7	9.8517	0.9446	1.1199	1.1628
8	9.7792	0.9274	1.2601	0.6931	8	9.8532	0.9454	1.1120	1.1702
9	9.7804	0.9268	1.2619	0.6624	9	9.8547	0.9463	1.1039	1.1773
10	9.7815	0.9263	1.2635	0.6291	10	9.8563	0.9471	1.0955	1.1842
11	+9.7827	+0.9258	+1.2650	−0.5928	11	+9.8579	+0.9479	+1.0867	+1.1909
12	9.7839	0.9254	1.2664	0.5533	12	9.8594	0.9487	1.0777	1.1973
13	9.7850	0.9249	1.2676	0.5095	13	9.8610	0.9495	1.0683	1.2035
14	9.7861	0.9245	1.2687	0.4606	14	9.8626	0.9502	1.0585	1.2095
15	9.7873	0.9242	1.2697	0.4054	15	9.8642	0.9510	1.0484	1.2153
16	+9.7884	+0.9238	+1.2706	−0.3418	16	+9.8658	+0.9518	+1.0379	+1.2208
17	9.7895	0.9235	1.2713	0.2672	17	9.8675	0.9525	1.0271	1.2262
18	9.7906	0.9232	1.2719	0.1767	18	9.8691	0.9532	1.0157	1.2314
19	9.7917	0.9230	1.2724	0.0622	19	9.8708	0.9539	1.0039	1.2363
20	9.7928	0.9227	1.2728	9.9058	20	9.8725	0.9546	0.9918	1.2412
21	+9.7939	+0.9226	+1.2730	−9.6590	21	+9.8741	+0.9553	+0.9790	+1.2458
22	9.7950	0.9224	1.2731	−9.0253	22	9.8758	0.9560	0.9657	1.2502
23	9.7961	0.9223	1.2731	+9.3856	23	9.8775	0.9566	0.9519	1.2545
24	9.7971	0.9222	1.2729	9.7731	24	9.8792	0.9573	0.9375	1.2585
25	9.7982	0.9221	1.2727	9.9745	25	9.8809	0.9579	0.9224	1.2624
26	+9.7993	+0.9221	+1.2722	+0.1116	26	+9.8827	+0.9585	+0.9067	+1.2662
27	9.8004	0.9221	1.2717	0.2156	27	9.8844	0.9590	0.8901	1.2698
28	9.8015	0.9222	1.2711	0.2993	28	9.8861	0.9596	0.8729	1.2732
29	9.8026	0.9223	1.2703	0.3694	29	9.8879	0.9601	0.8547	1.2764
30	9.8037	0.9224	1.2693	0.4298	30	9.8896	0.9606	0.8356	1.2795
Oct. 1	+9.8047	+0.9225	+1.2683	+0.4826	Dec. 1	+9.8914	+0.9611	+0.8154	+1.2825
2	9.8058	0.9227	1.2671	0.5296	2	9.8932	0.9615	0.7941	1.2852
3	9.8069	0.9229	1.2658	0.5718	3	9.8949	0.9620	0.7717	1.2878
4	9.8080	0.9232	1.2643	0.6103	4	9.8967	0.9623	0.7478	1.2904
5	9.8091	0.9234	1.2627	0.6455	5	9.8985	0.9627	0.7224	1.2927
6	+9.8103	+0.9237	+1.2610	+0.6780	6	+9.9002	+0.9630	+0.6952	+1.2949
7	9.8114	0.9241	1.2591	0.7081	7	9.9020	0.9634	0.6661	1.2969
8	9.8125	0.9244	1.2572	0.7362	8	9.9038	0.9636	0.6347	1.2988
9	9.8136	0.9248	1.2550	0.7624	9	9.9056	0.9639	0.6008	1.3005
10	9.8148	0.9252	1.2527	0.7870	10	9.9074	0.9641	0.5637	1.3022
11	+9.8159	+0.9257	+1.2503	+0.8102	11	+9.9091	+0.9643	+0.5231	+1.3036
12	9.8171	0.9262	1.2477	0.8321	12	9.9109	0.9645	0.4781	1.3049
13	9.8183	0.9266	1.2450	0.8529	13	9.9127	0.9646	0.4278	1.3061
14	9.8194	0.9272	1.2421	0.8726	14	9.9145	0.9647	0.3707	1.3072
15	9.8206	0.9277	1.2391	0.8912	15	9.9163	0.9647	0.3047	1.3081
16	+9.8218	+0.9283	+1.2359	+0.9091	16	+9.9180	+0.9648	+0.2266	+1.3088
17	9.8230	0.9289	1.2326	0.9260	17	9.9198	0.9648	0.1313	1.3094
18	9.8243	0.9295	1.2291	0.9423	18	9.9216	0.9647	0.0090	1.3099
19	9.8255	0.9301	1.2255	0.9579	19	9.9233	0.9647	9.8376	1.3103
20	9.8268	0.9308	1.2216	0.9728	20	9.9251	0.9646	9.5490	1.3105
21	+9.8280	+0.9315	+1.2177	+0.9872	21	+9.9268	+0.9644	+8.3222	+1.3106
22	9.8293	0.9321	1.2135	1.0008	22	9.9285	0.9643	−9.4955	1.3105
23	9.8306	0.9328	1.2092	1.0140	23	9.9303	0.9641	9.8102	1.3103
24	9.8319	0.9336	1.2047	1.0267	24	9.9320	0.9638	9.9908	1.3100
25	9.8332	0.9343	1.2000	1.0389	25	9.9337	0.9636	0.1179	1.3095
26	+9.8346	+0.9350	+1.1951	+1.0505	26	+9.9354	+0.9633	−0.2162	+1.3089
27	9.8359	0.9358	1.1900	1.0618	27	9.9371	0.9629	0.2960	1.3082
28	9.8373	0.9366	1.1847	1.0727	28	9.9388	0.9626	0.3634	1.3073
29	9.8386	0.9373	1.1793	1.0832	29	9.9405	0.9622	0.4214	1.3062
30	9.8400	0.9381	1.1735	1.0934	30	9.9421	0.9617	0.4726	1.3051
31	+9.8414	+0.9389	+1.1676	+1.1032	31	+9.9438	+0.9613	−0.5183	+1.3038
32	+9.8428	+0.9397	+1.1616	+1.1126	32	+9.9454	+0.9608	−0.5594	+1.3023

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f.*	Log *g*.	G.	Log *h*.	H.	Log *i*.	τ.
Jan. 1	0″.00	−0″.11	0.9921	90° 17′	1.3092	349° 31′	−0.2064	0.0038
2	0.00	+0.04	0.9917	89 54	1.3090	348 35	0.2430	0.0065
3	0.00	0.19	0.9913	89 31	1.3087	347 38	0.2767	0.0093
4	0.00	0.34	0.9909	89 8	1.3085	346 42	0.3078	0.0120
5	0.00	0.49	0.9905	88 45	1.3081	345 45	0.3367	0.0148
6	0.00	+0.64	0.9901	88 22	1.3078	344 49	−0.3638	0.0175
7	0.00	0.79	0.9897	88 0	1.3075	343 51	0.3889	0.0202
8	0.00	0.93	0.9893	87 37	1.3071	342 54	0.4127	0.0230
9	0.00	1.08	0.9888	87 14	1.3067	341 57	0.4351	0.0257
10	0.00	1.22	0.9884	86 52	1.3063	341 0	0.4562	0.0285
11	0.00	+1.37	0.9880	86 29	1.3059	340 3	−0.4763	0.0312
12	0.00	1.51	0.9875	86 7	1.3055	339 5	0.4953	0.0339
13	0.00	1.65	0.9870	85 45	1.3050	338 8	0.5134	0.0367
14	0.00	1.80	0.9866	85 23	1.3045	337 10	0.5307	0.0394
15	0.00	1.93	0.9861	85 1	1.3040	336 13	0.5471	0.0421
16	0.00	+2.07	0.9856	84 39	1.3035	335 15	−0.5628	0.0449
17	0.00	2.21	0.9851	84 17	1.3030	334 17	0.5779	0.0476
18	0.00	2.35	0.9846	83 56	1.3025	333 19	0.5922	0.0504
19	0.00	2.48	0.9842	83 34	1.3019	332 21	0.6060	0.0531
20	0.00	2.62	0.9837	83 13	1.3014	331 22	0.6192	0.0558
21	0.00	+2.75	0.9832	82 52	1.3008	330 24	−0.6319	0.0586
22	0.00	2.88	0.9827	82 30	1.3002	329 25	0.6441	0.0613
23	0.00	3.01	0.9822	82 9	1.2997	328 27	0.6558	0.0640
24	0.00	3.14	0.9817	81 49	1.2991	327 27	0.6671	0.0668
25	0.00	3.26	0.9812	81 28	1.2985	326 28	0.6780	0.0695
26	0.00	+3.39	0.9807	81 8	1.2979	325 29	−0.6885	0.0723
27	0.00	3.51	0.9802	80 47	1.2972	324 30	0.6986	0.0750
28	0.00	3.64	0.9797	80 27	1.2966	323 30	0.7083	0.0777
29	0.00	3.76	0.9792	80 7	1.2960	322 31	0.7176	0.0805
30	0.00	3.88	0.9788	79 48	1.2953	321 31	0.7267	0.0832
31	0.00	+4.00	0.9783	79 28	1.2947	320 31	−0.7354	0.0859
Feb. 1	0.00	4.11	0.9778	79 8	1.2940	319 31	0.7438	0.0887
2	0.00	4.23	0.9773	78 49	1.2933	318 30	0.7519	0.0914
3	0.00	4.34	0.9769	78 30	1.2927	317 30	0.7598	0.0942
4	0.00	4.46	0.9764	78 11	1.2920	316 29	0.7673	0.0969
5	0.00	+4.57	0.9760	77 53	1.2914	315 28	−0.7746	0.0996
6	0.00	4.68	0.9755	77 34	1.2907	314 27	0.7816	0.1024
7	0.00	4.78	0.9751	77 16	1.2900	313 26	0.7884	0.1051
8	0.00	4.89	0.9747	76 58	1.2894	312 25	0.7950	0.1079
9	0.00	5.00	0.9742	76 40	1.2887	311 23	0.8013	0.1106
10	0.00	+5.10	0.9738	76 22	1.2881	310 21	−0.8074	0.1133
11	0.00	5.20	0.9735	76 5	1.2874	309 19	0.8132	0.1161
12	0.00	5.30	0.9731	75 47	1.2868	308 17	0.8189	0.1188
13	0.00	5.40	0.9727	75 30	1.2861	307 15	0.8243	0.1215
14	0.00	5.50	0.9724	75 13	1.2854	306 13	0.8296	0.1243
15	0.00	+5.60	0.9720	74 57	1.2848	305 11	−0.8346	0.1270
16	0.00	5.69	0.9717	74 40	1.2842	304 8	0.8395	0.1298
17	0.00	5.79	0.9714	74 24	1.2836	303 5	0.8441	0.1325
18	0.00	5.88	0.9711	74 8	1.2830	302 2	0.8486	0.1352
19	0.00	5.97	0.9708	73 52	1.2824	300 59	0.8529	0.1380
20	0.00	+6.06	0.9706	73 36	1.2819	299 56	−0.8570	0.1407

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f.*	Log *g.*	G.	Log *h.*	H.	Log *i.*	T.
Feb. 20	0″.00	+6″.06	0.9706	73° 36′	1.2819	299° 56′	−0.8570	0.1407
21	0.00	6.15	0.9703	73 21	1.2813	298 53	0.8609	0.1434
22	0.00	6.24	0.9701	73 6	1.2808	297 50	0.8647	0.1462
23	0.00	6.33	0.9699	72 51	1.2802	296 46	0.8683	0.1489
24	0.00	6.41	0.9698	72 36	1.2797	295 42	0.8718	0.1517
25	0.00	+6.50	0.9696	72 21	1.2791	294 38	−0.8751	0.1544
26	0.00	6.58	0.9695	72 7	1.2787	293 35	0.8782	0.1571
27	0.00	6.66	0.9694	71 52	1.2782	292 31	0.8812	0.1599
28	0.00	6.74	0.9693	71 38	1.2778	291 26	0.8840	0.1626
Mar. 1	0.00	6.82	0.9692	71 25	1.2774	290 22	0.8866	0.1653
2	0.00	+6.90	0.9692	71 11	1.2769	289 18	−0.8891	0.1681
3	0.00	6.98	0.9692	70 58	1.2765	288 13	0.8915	0.1708
4	0.00	7.06	0.9692	70 44	1.2761	287 9	0.8937	0.1736
5	0.00	7.14	0.9692	70 31	1.2758	286 4	0.8957	0.1763
6	0.00	7.21	0.9693	70 18	1.2754	285 0	0.8977	0.1790
7	0.00	+7.29	0.9694	70 6	1.2751	283 55	−0.8995	0.1818
8	0.00	7.37	0.9695	69 53	1.2748	282 50	0.9012	0.1845
9	0.00	7.44	0.9697	69 41	1.2746	281 45	0.9027	0.1873
10	0.00	7.51	0.9699	69 29	1.2743	280 40	0.9041	0.1900
11	0.00	7.59	0.9701	69 17	1.2741	279 35	0.9053	0.1927
12	0.00	+7.66	0.9703	69 5	1.2739	278 30	−0.9064	0.1955
13	0.00	7.73	0.9706	68 53	1.2737	277 25	0.9074	0.1982
14	0.00	7.81	0.9709	68 42	1.2736	276 20	0.9082	0.2009
15	−0.01	7.88	0.9712	68 30	1.2734	275 15	0.9089	0.2037
16	0.01	7.95	0.9716	68 19	1.2733	274 10	0.9095	0.2064
17	−0.01	+8.02	0.9720	68 8	1.2732	273 5	−0.9099	0.2092
18	0.01	8.09	0.9724	67 57	1.2732	272 0	0.9102	0.2119
19	0.01	8.17	0.9728	67 46	1.2731	270 55	0.9104	0.2146
20	0.01	8.24	0.9733	67 36	1.2731	269 50	0.9105	0.2173
21	0.01	8.31	0.9738	67 25	1.2732	268 46	0.9104	0.2201
22	−0.01	+8.38	0.9744	67 14	1.2732	267 41	−0.9102	0.2228
23	0.01	8.45	0.9750	67 4	1.2733	266 36	0.9098	0.2256
24	0.01	8.52	0.9756	66 54	1.2733	265 31	0.9093	0.2283
25	0.01	8.60	0.9762	66 44	1.2734	264 27	0.9087	0.2311
26	0.01	8.67	0.9769	66 33	1.2736	263 22	0.9080	0.2338
27	−0.01	+8.74	0.9776	66 23	1.2737	262 18	−0.9071	0.2365
28	0.01	8.81	0.9783	66 13	1.2739	261 13	0.9062	0.2393
29	0.01	8.89	0.9791	66 3	1.2741	260 9	0.9050	0.2420
30	0.01	8.96	0.9799	65 54	1.2744	259 5	0.9038	0.2447
31	0.01	9.03	0.9807	65 44	1.2746	258 1	0.9024	0.2475
Apr. 1	−0.01	+9.11	0.9816	65 34	1.2749	256 57	−0.9008	0.2502
2	0.01	9.18	0.9825	65 25	1.2752	255 53	0.8992	0.2530
3	0.01	9.26	0.9834	65 15	1.2755	254 49	0.8974	0.2557
4	0.01	9.33	0.9843	65 5	1.2759	253 45	0.8955	0.2584
5	0.01	9.41	0.9853	64 56	1.2762	252 42	0.8934	0.2612
6	−0.01	+9.49	0.9863	64 46	1.2766	251 39	−0.8912	0.2639
7	0.01	9.57	0.9874	64 37	1.2770	250 35	0.8889	0.2667
8	0.01	9.65	0.9884	64 27	1.2774	249 32	0.8864	0.2694
9	0.01	9.73	0.9895	64 18	1.2778	248 29	0.8838	0.2721
10	0.01	9.81	0.9906	64 9	1.2782	247 27	0.8811	0.2749
11	−0.01	+9.89	0.9918	63 59	1.2787	246 24	−0.8781	0.2776

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f.*	Log *g.*	G.	Log *h.*	H.	Log *i.*	τ.
Apr. 11	−0″.01	+ 9″.89	0.9918	63° 59′	1.2787	246° 24′	−0.8781	0.2776
12	0.01	9.97	0.9929	63 50	1.2792	245 22	0.8751	0.2803
13	0.01	10.05	0.9941	63 40	1.2797	244 20	0.8719	0.2831
14	0.01	10.14	0.9953	63 31	1.2802	243 18	0.8685	0.2858
15	0.01	10.22	0.9966	63 21	1.2807	242 16	0.8651	0.2886
16	−0.01	+10.31	0.9979	63 12	1.2812	241 14	−0.8614	0.2913
17	0.01	10.40	0.9992	63 2	1.2818	240 13	0.8576	0.2940
18	0.01	10.49	1.0005	62 52	1.2823	239 12	0.8536	0.2968
19	0.01	10.58	1.0018	62 43	1.2829	238 11	0.8496	0.2995
20	0.01	10.67	1.0032	62 33	1.2835	237 10	0.8452	0.3022
21	−0.01	+10.76	1.0045	62 23	1.2841	236 9	−0.8408	0.3050
22	0.01	10.85	1.0059	62 14	1.2847	235 9	0.8361	0.3077
23	0.01	10.95	1.0073	62 4	1.2853	234 8	0.8313	0.3105
24	0.01	11.04	1.0088	61 54	1.2859	233 8	0.8263	0.3132
25	0.01	11.14	1.0102	61 44	1.2865	232 8	0.8212	0.3159
26	−0.01	+11.24	1.0117	61 34	1.2871	231 8	−0.8158	0.3187
27	0.01	11.34	1.0132	61 24	1.2877	230 9	0.8103	0.3214
28	0.01	11.44	1.0147	61 14	1.2883	229 10	0.8045	0.3241
29	0.01	11.54	1.0162	61 4	1.2890	228 11	0.7986	0.3269
30	0.01	11.64	1.0177	60 53	1.2896	227 12	0.7925	0.3296
May. 1	−0.01	+11.75	1.0193	60 43	1.2903	226 13	−0.7861	0.3324
2	0.01	11.85	1.0208	60 33	1.2909	225 15	0.7795	0.3351
3	0.01	11.96	1.0224	60 22	1.2915	224 16	0.7728	0.3378
4	0.01	12.07	1.0239	60 11	1.2922	223 18	0.7657	0.3406
5	0.01	12.18	1.0255	60 1	1.2928	222 20	0.7585	0.3433
6	−0.01	+12.29	1.0271	59 50	1.2934	221 22	−0.7510	0.3461
7	0.01	12.40	1.0287	59 39	1.2941	220 25	0.7432	0.3488
8	0.01	12.52	1.0303	59 28	1.2947	219 28	0.7352	0.3515
9	0.01	12.63	1.0320	59 17	1.2953	218 31	0.7269	0.3543
10	0.01	12.75	1.0336	59 6	1.2959	217 34	0.7183	0.3570
11	−0.01	+12.86	1.0352	58 55	1.2965	216 37	−0.7094	0.3597
12	0.01	12.98	1.0368	58 44	1.2971	215 40	0.7002	0.3625
13	0.01	13.10	1.0385	58 32	1.2977	214 44	0.6907	0.3652
14	0.01	13.22	1.0401	58 21	1.2983	213 48	0.6809	0.3680
15	0.01	13.35	1.0418	58 9	1.2989	212 52	0.6707	0.3707
16	−0.01	+13.47	1.0434	57 58	1.2995	211 56	−0.6601	0.3734
17	0.01	13.60	1.0451	57 46	1.3001	210 59	0.6492	0.3762
18	0.01	13.72	1.0467	57 34	1.3006	210 5	0.6379	0.3789
19	0.01	13.85	1.0484	57 22	1.3011	209 9	0.6261	0.3816
20	0.01	13.98	1.0500	57 10	1.3016	208 14	0.6139	0.3844
21	−0.01	+14.11	1.0516	56 58	1.3022	207 19	−0.6012	0.3871
22	0.01	14.24	1.0533	56 46	1.3027	206 24	0.5881	0.3899
23	0.01	14.37	1.0549	56 34	1.3031	205 29	0.5743	0.3926
24	0.01	14.50	1.0566	56 22	1.3036	204 35	0.5600	0.3953
25	0.01	14.63	1.0582	56 9	1.3041	203 40	0.5451	0.3981
26	−0.01	+14.77	1.0598	55 57	1.3046	202 46	−0.5296	0.4008
27	0.01	14.90	1.0615	55 44	1.3050	201 52	0.5134	0.4035
28	0.01	15.04	1.0631	55 32	1.3053	200 58	0.4964	0.4063
29	0.01	15.18	1.0647	55 19	1.3058	200 4	0.4786	0.4090
30	0.01	15.31	1.0663	55 6	1.3062	199 10	0.4598	0.4118
31	−0.01	+15.45	1.0679	54 52	1.3066	198 16	−0.4401	0.4145

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f.*	Log *g.*	G.	Log *h.*	H.	Log *i.*	τ.
May 31	−0″.01	+15″.45	1.0679	54° 53′	1.3066	198° 16′	−0.4401	0.4145
June 1	0.01	15.59	1.0695	54 40	1.3070	197 23	0.4196	0.4172
2	0.01	15.73	1.0711	54 27	1.3073	196 29	0.3975	0.4200
3	0.01	15.88	1.0727	54 14	1.3076	195 35	0.3743	0.4227
4	0.01	16.02	1.0743	54 1	1.3079	194 42	0.3497	0.4254
5	−0.01	+16.16	1.0758	53 48	1.3082	193 49	−0.3235	0.4282
6	0.01	16.30	1.0774	53 35	1.3086	192 56	0.2955	0.4309
7	0.01	16.44	1.0790	53 22	1.3088	192 3	0.2655	0.4337
8	0.01	16.59	1.0805	53 8	1.3091	191 9	0.2331	0.4364
9	0.01	16.74	1.0820	52 55	1.3093	190 16	0.1978	0.4391
10	−0.01	+16.88	1.0836	52 41	1.3095	189 24	−0.1595	0.4419
11	0.01	17.03	1.0851	52 28	1.3097	188 31	0.1174	0.4446
12	0.01	17.18	1.0866	52 14	1.3099	187 38	0.0705	0.4474
13	0.01	17.32	1.0881	52 0	1.3100	186 45	0.0177	0.4501
14	0.01	17.47	1.0895	51 47	1.3102	185 53	9.9577	0.4528
15	−0.01	+17.62	1.0910	51 33	1.3103	185 0	−9.8878	0.4556
16	0.01	17.76	1.0924	51 20	1.3104	184 7	9.8044	0.4583
17	0.01	17.91	1.0938	51 6	1.3105	183 15	9.7011	0.4610
18	0.01	18.06	1.0952	50 52	1.3105	182 22	9.5652	0.4638
19	0.01	18.21	1.0967	50 38	1.3106	181 30	9.3657	0.4665
20	−0.01	+18.35	1.0981	50 24	1.3106	180 37	−8.9837	0.4693
21	0.01	18.50	1.0994	50 10	1.3106	179 45	+8.5916	0.4720
22	0.01	18.65	1.1008	49 57	1.3106	178 53	9.2405	0.4747
23	0.01	18.80	1.1022	49 43	1.3105	178 0	9.4910	0.4775
24	0.01	18.95	1.1035	49 29	1.3105	177 7	9.6485	0.4802
25	−0.01	+19.09	1.1048	49 15	1.3104	176 15	+9.7635	0.4829
26	0.01	19.24	1.1061	49 1	1.3103	175 22	9.8543	0.4857
27	0.01	19.39	1.1074	48 47	1.3102	174 30	9.9294	0.4884
28	0.01	19.54	1.1087	48 33	1.3101	173 37	9.9932	0.4912
29	0.01	19.68	1.1100	48 19	1.3099	172 45	0.0488	0.4939
30	−0.01	+19.83	1.1112	48 5	1.3098	171 52	+0.0978	0.4966
July 1	0.01	19.97	1.1125	47 51	1.3096	170 59	0.1418	0.4994
2	0.01	20.12	1.1137	47 38	1.3094	170 6	0.1817	0.5021
3	0.01	20.26	1.1149	47 24	1.3092	169 14	0.2180	0.5048
4	0.01	20.41	1.1161	47 10	1.3089	168 21	0.2515	0.5076
5	−0.01	+20.55	1.1172	46 56	1.3087	167 28	+0.2825	0.5103
6	0.01	20.70	1.1184	46 42	1.3084	166 35	0.3113	0.5131
7	0.01	20.84	1.1195	46 28	1.3081	165 42	0.3381	0.5158
8	0.01	20.98	1.1207	46 15	1.3078	164 49	0.3633	0.5185
9	0.01	21.12	1.1218	46 1	1.3075	163 56	0.3871	0.5213
10	−0.01	+21.26	1.1229	45 47	1.3071	163 2	+0.4094	0.5240
11	0.01	21.40	1.1240	45 34	1.3068	162 9	0.4306	0.5268
12	0.01	21.54	1.1251	45 20	1.3064	161 16	0.4507	0.5295
13	0.01	21.68	1.1261	45 7	1.3060	160 22	0.4697	0.5322
14	0.01	21.82	1.1272	44 53	1.3056	159 28	0.4879	0.5350
15	−0.01	+21.96	1.1282	44 40	1.3052	158 34	+0.5052	0.5377
16	0.01	22.09	1.1292	44 26	1.3048	157 40	0.5217	0.5404
17	0.01	22.23	1.1302	44 13	1.3043	156 46	0.5375	0.5432
18	0.01	22.36	1.1312	44 0	1.3039	155 52	0.5527	0.5459
19	0.01	22.49	1.1322	43 46	1.3034	154 58	0.5672	0.5487
20	−0.01	+22.62	1.1331	43 33	1.3029	154 4	+0.5811	0.5514

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	f.	Log g.	G.	Log h.	H.	Log i.	T.
July 20	−0″.01	+22″.62	1.1331	43° 33′	1.3029	154° 4′	+0.5811	0.5514
21	0.01	22.75	1.1340	43 20	1.3024	153 9	0.5945	0.5541
22	0.01	22.88	1.1349	43 7	1.3019	152 15	0.6073	0.5569
23	0.01	23.01	1.1358	42 54	1.3014	151 20	0.6198	0.5596
24	0.01	23.14	1.1367	42 41	1.3009	150 25	0.6317	0.5623
25	−0.01	+23.27	1.1376	42 29	1.3003	149 30	+0.6431	0.5651
26	0.01	23.39	1.1385	42 16	1.2998	148 35	0.6543	0.5678
27	0.01	23.52	1.1394	42 4	1.2992	147 39	0.6649	0.5706
28	0.01	23.64	1.1402	41 51	1.2986	146 44	0.6752	0.5733
29	0.01	23.76	1.1411	41 39	1.2981	145 48	0.6852	0.5760
30	−0.01	+23.88	1.1419	41 26	1.2975	144 53	+0.6948	0.5788
31	0.01	24.00	1.1427	41 14	1.2969	143 56	0.7041	0.5815
Aug. 1	0.01	24.12	1.1435	41 2	1.2963	143 0	0.7131	0.5842
2	0.01	24.23	1.1443	40 50	1.2957	142 4	0.7218	0.5870
3	0.01	24.35	1.1450	40 38	1.2951	141 7	0.7302	0.5897
4	−0.01	+24.46	1.1458	40 26	1.2944	140 10	+0.7383	0.5925
5	0.01	24.58	1.1465	40 15	1.2938	139 13	0.7461	0.5952
6	0.01	24.69	1.1473	40 3	1.2932	138 16	0.7537	0.5979
7	0.01	24.80	1.1480	39 52	1.2926	137 19	0.7611	0.6007
8	0.01	24.91	1.1487	39 41	1.2920	136 22	0.7682	0.6034
9	−0.01	+25.02	1.1495	39 29	1.2913	135 24	+0.7751	0.6062
10	0.01	25.12	1.1502	39 18	1.2907	134 26	0.7818	0.6089
11	0.01	25.23	1.1509	39 8	1.2901	133 28	0.7882	0.6116
12	0.01	25.33	1.1516	38 57	1.2894	132 30	0.7944	0.6144
13	0.01	25.43	1.1522	38 46	1.2888	131 32	0.8004	0.6171
14	−0.01	+25.54	1.1529	38 36	1.2882	130 33	+0.8063	0.6198
15	0.01	25.64	1.1535	38 25	1.2876	129 34	0.8119	0.6226
16	0.01	25.73	1.1542	38 15	1.2869	128 35	0.8173	0.6253
17	0.01	25.83	1.1548	38 5	1.2863	127 36	0.8225	0.6281
18	0.01	25.93	1.1555	37 55	1.2857	126 37	0.8276	0.6308
19	−0.01	+26.02	1.1561	37 46	1.2851	125 37	+0.8325	0.6335
20	0.01	26.12	1.1568	37 36	1.2845	124 38	0.8372	0.6363
21	0.01	26.21	1.1574	37 26	1.2839	123 38	0.8417	0.6390
22	0.01	26.30	1.1580	37 17	1.2834	122 38	0.8461	0.6417
23	0.01	26.39	1.1586	37 8	1.2828	121 37	0.8503	0.6445
24	−0.01	+26.48	1.1592	36 59	1.2822	120 37	+0.8544	0.6472
25	0.01	26.57	1.1599	36 50	1.2817	119 36	0.8583	0.6500
26	0.01	26.66	1.1605	36 42	1.2811	118 36	0.8620	0.6527
27	0.01	26.75	1.1611	36 33	1.2806	117 35	0.8656	0.6554
28	0.01	26.83	1.1617	36 25	1.2801	116 33	0.8690	0.6582
29	−0.01	+26.92	1.1623	36 16	1.2796	115 32	+0.8723	0.6609
30	0.01	27.00	1.1629	36 8	1.2791	114 30	0.8755	0.6636
31	0.01	27.08	1.1635	36 0	1.2787	113 29	0.8785	0.6664
Sept. 1	0.01	27.17	1.1641	35 53	1.2782	112 27	0.8813	0.6691
2	0.01	27.25	1.1647	35 45	1.2778	111 25	0.8840	0.6719
3	−0.01	+27.33	1.1653	35 38	1.2773	110 23	+0.8866	0.6746
4	0.01	27.40	1.1659	35 30	1.2769	109 20	0.8890	0.6773
5	0.01	27.48	1.1665	35 23	1.2766	108 18	0.8915	0.6801
6	0.01	27.56	1.1671	35 16	1.2762	107 16	0.8935	0.6828
7	0.01	27.64	1.1677	35 10	1.2758	106 13	0.8956	0.6856
8	−0.01	+27.71	1.1683	35 3	1.2755	105 10	+0.8974	0.6883

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	T.
Sept. 8	−0″.01	+27″.71	1.1683	35° 3′	1.2755	105° 10′	+0.8974	0.6883
9	0.01	27.79	1.1689	34 56	1.2752	104 7	0.8992	0.6910
10	0.01	27.87	1.1695	34 50	1.2749	103 4	0.9008	0.6938
11	0.01	27.94	1.1701	34 44	1.2746	102 1	0.9023	0.6965
12	0.01	28.01	1.1708	34 38	1.2744	100 57	0.9037	0.6992
13	−0.01	+28.09	1.1714	34 32	1.2741	99 54	+0.9050	0.7020
14	0.01	28.16	1.1721	34 26	1.2739	98 51	0.9061	0.7047
15	0.01	28.24	1.1727	34 21	1.2738	97 47	0.9071	0.7075
16	0.01	28.31	1.1734	34 16	1.2736	96 43	0.9079	0.7102
17	0.01	28.38	1.1740	34 10	1.2735	95 39	0.9087	0.7129
18	−0.01	+28.45	1.1747	34 5	1.2733	94 35	+0.9093	0.7157
19	0.01	28.53	1.1754	34 0	1.2732	93 32	0.9097	0.7184
20	0.01	28.60	1.1760	33 55	1.2732	92 28	0.9101	0.7211
21	0.01	28.67	1.1767	33 51	1.2731	91 24	0.9103	0.7239
22	0.01	28.74	1.1774	33 46	1.2731	90 19	0.9104	0.7266
23	−0.01	+28.81	1.1782	33 42	1.2731	89 15	+0.9104	0.7294
24	0.01	28.88	1.1789	33 38	1.2732	88 11	0.9103	0.7321
25	0.01	28.96	1.1796	33 34	1.2732	87 7	0.9100	0.7348
26	0.01	29.03	1.1804	33 30	1.2733	86 3	0.9096	0.7376
27	0.02	29.10	1.1811	33 26	1.2734	84 59	0.9090	0.7403
28	−0.02	+29.17	1.1819	33 22	1.2735	83 55	+0.9084	0.7430
29	0.02	29.25	1.1827	33 18	1.2737	82 50	0.9076	0.7458
30	0.02	29.32	1.1835	33 14	1.2738	81 46	0.9067	0.7485
Oct. 1	0.02	29.39	1.1843	33 11	1.2740	80 42	0.9056	0.7513
2	0.02	29.47	1.1851	33 8	1.2742	79 38	0.9044	0.7540
3	−0.02	+29.54	1.1859	33 5	1.2745	78 34	+0.9031	0.7567
4	0.02	29.62	1.1868	33 1	1.2747	77 30	0.9016	0.7595
5	0.02	29.69	1.1876	32 58	1.2750	76 26	0.9001	0.7622
6	0.02	29.77	1.1885	32 56	1.2753	75 22	0.8983	0.7650
7	0.02	29.85	1.1894	32 53	1.2757	74 18	0.8965	0.7677
8	−0.02	+29.92	1.1903	32 50	1.2760	73 14	+0.8945	0.7704
9	0.02	30.00	1.1912	32 47	1.2764	72 10	0.8924	0.7732
10	0.02	30.08	1.1921	32 45	1.2768	71 7	0.8901	0.7759
11	0.02	30.16	1.1931	32 42	1.2772	70 2	0.8876	0.7786
12	0.02	30.24	1.1941	32 40	1.2776	68 59	0.8851	0.7814
13	−0.02	+30.32	1.1950	32 37	1.2780	67 56	+0.8823	0.7841
14	0.02	30.41	1.1960	32 35	1.2785	66 53	0.8795	0.7869
15	0.02	30.49	1.1970	32 32	1.2790	65 50	0.8764	0.7896
16	0.02	30.57	1.1980	32 30	1.2795	64 46	0.8733	0.7923
17	0.02	30.66	1.1991	32 28	1.2800	63 44	0.8700	0.7951
18	−0.02	+30.75	1.2001	32 26	1.2805	62 41	+0.8665	0.7978
19	0.02	30.84	1.2012	32 24	1.2810	61 38	0.8628	0.8005
20	0.02	30.92	1.2023	32 22	1.2816	60 35	0.8590	0.8033
21	0.02	31.01	1.2034	32 19	1.2822	59 33	0.8550	0.8060
22	0.02	31.11	1.2045	32 17	1.2827	58 30	0.8508	0.8088
23	−0.02	+31.20	1.2056	32 15	1.2833	57 28	+0.8465	0.8115
24	0.02	31.29	1.2067	32 13	1.2839	56 26	0.8420	0.8142
25	0.02	31.39	1.2079	32 11	1.2845	55 23	0.8373	0.8170
26	0.02	31.48	1.2091	32 9	1.2851	54 22	0.8324	0.8197
27	0.02	31.58	1.2103	32 7	1.2858	53 20	0.8274	0.8224
28	−0.02	+31.68	1.2114	32 5	1.2864	52 18	+0.8221	0.8252

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	*f.*	Log *g.*	G.	Log *h.*	H.	Log *i.*	T.
Oct. 28	−0″.02	+31″.68	1.2114	32° 5′	1.2864	52° 18′	+0.8221	0.8252
29	0.02	31.78	1.2126	32 3	1.2870	51 17	0.8166	0.8279
30	0.02	31.88	1.2139	32 0	1.2877	50 15	0.8109	0.8307
31	0.02	31.98	1.2151	31 58	1.2883	49 14	0.8050	0.8334
Nov. 1	0.02	32.09	1.2163	31 56	1.2890	48 13	0.7989	0.8361
2	−0.02	+32.19	1.2176	31 54	1.2896	47 12	+0.7925	0.8389
3	0.02	32.30	1.2189	31 52	1.2903	46 12	0.7860	0.8416
4	0.02	32.41	1.2202	31 49	1.2909	45 11	0.7792	0.8444
5	0.02	32.52	1.2215	31 47	1.2916	44 11	0.7721	0.8471
6	0.02	32.63	1.2228	31 45	1.2923	43 10	0.7648	0.8498
7	−0.02	+32.75	1.2241	31 42	1.2929	42 11	+0.7572	0.8526
8	0.02	32.86	1.2254	31 40	1.2935	41 11	0.7494	0.8553
9	0.02	32.98	1.2267	31 37	1.2942	40 11	0.7412	0.8580
10	0.02	33.10	1.2281	31 34	1.2949	39 11	0.7328	0.8608
11	0.02	33.22	1.2294	31 32	1.2955	38 12	0.7241	0.8635
12	−0.02	+33.34	1.2308	31 29	1.2961	37 13	+0.7150	0.8663
13	0.02	33.46	1.2322	31 26	1.2968	36 13	0.7056	0.8690
14	0.02	33.58	1.2335	31 23	1.2974	35 14	0.6959	0.8717
15	0.02	33.71	1.2349	31 20	1.2980	34 15	0.6858	0.8745
16	0.02	33.83	1.2363	31 17	1.2986	33 17	0.6753	0.8772
17	−0.02	+33.96	1.2377	31 14	1.2992	32 18	+0.6644	0.8799
18	0.02	34.09	1.2391	31 11	1.2998	31 20	0.6531	0.8827
19	0.02	34.22	1.2405	31 8	1.3004	30 21	0.6413	0.8854
20	0.02	34.35	1.2419	31 4	1.3010	29 23	0.6291	0.8882
21	0.02	34.49	1.2433	31 1	1.3015	28 25	0.6163	0.8909
22	−0.02	+34.62	1.2448	30 57	1.3020	27 27	+0.6031	0.8936
23	0.02	34.76	1.2462	30 53	1.3026	26 29	0.5892	0.8964
24	0.02	34.89	1.2476	30 50	1.3031	25 31	0.5748	0.8991
25	0.02	35.03	1.2490	30 46	1.3036	24 34	0.5598	0.9018
26	0.02	35.17	1.2505	30 42	1.3041	23 36	0.5441	0.9046
27	−0.02	+35.31	1.2519	30 38	1.3046	22 39	+0.5275	0.9073
28	0.02	35.45	1.2533	30 34	1.3051	21 42	0.5102	0.9101
29	0.02	35.60	1.2547	30 29	1.3056	20 46	0.4920	0.9128
30	0.02	35.74	1.2562	30 25	1.3060	19 47	0.4729	0.9155
Dec. 1	0.02	35.89	1.2576	30 21	1.3064	18 50	0.4528	0.9183
2	−0.02	+36.03	1.2590	30 16	1.3067	17 53	+0.4315	0.9210
3	0.02	36.18	1.2605	30 12	1.3071	16 57	0.4090	0.9237
4	0.02	36.33	1.2619	30 7	1.3075	16 0	0.3851	0.9265
5	0.02	36.47	1.2633	30 2	1.3079	15 3	0.3597	0.9292
6	0.02	36.62	1.2647	29 57	1.3082	14 7	0.3326	0.9320
7	−0.02	+36.77	1.2661	29 52	1.3085	13 10	+0.3034	0.9347
8	0.02	36.93	1.2675	29 47	1.3088	12 14	0.2720	0.9374
9	0.02	37.08	1.2689	29 42	1.3090	11 17	0.2381	0.9402
10	0.02	37.23	1.2703	29 36	1.3093	10 21	0.2011	0.9429
11	0.02	37.38	1.2717	29 31	1.3095	9 25	0.1604	0.9457
12	−0.02	+37.54	1.2731	29 26	1.3097	8 28	+0.1155	0.9484
13	0.02	37.69	1.2745	29 20	1.3099	7 32	0.0652	0.9511
14	0.02	37.84	1.2759	29 14	1.3100	6 36	0.0080	0.9539
15	0.02	38.00	1.2773	29 8	1.3102	5 40	9.9421	0.9566
16	0.02	38.15	1.2786	29 3	1.3103	4 44	9.8639	0.9593
17	−0.02	+38.31	1.2800	28 57	1.3104	3 48	+9.7686	0.9621

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	E.	f.	Log g.	G.	Log h.	H.	Log i.	τ.
Dec. 17	−0″.02	+38″.31	1.2800	28° 57′	1.3104	3° 48′	+9.7686	0.9621
18	0.02	38.47	1.2813	28 51	1.3105	2 52	9.6464	0.9648
19	0.02	38.62	1.2826	28 45	1.3105	1 56	9.4749	0.9676
20	0.02	38.78	1.2840	28 38	1.3106	1 0	9.1863	0.9703
21	0.02	38.93	1.2853	28 32	1.3106	0 4	+7.9596	0.9730
22	−0.02	+39.09	1.2866	28 26	1.3106	359 7	−9.1329	0.9758
23	0.02	39.24	1.2879	28 20	1.3106	358 11	9.4476	0.9785
24	0.02	39.40	1.2892	28 13	1.3105	357 15	9.6281	0.9812
25	0.02	39.56	1.2904	28 7	1.3104	356 19	9.7553	0.9840
26	0.02	39.71	1.2917	28 0	1.3103	355 22	9.8535	0.9867
27	−0.02	+39.87	1.2929	27 53	1.3102	354 27	−9.9334	0.9895
28	0.02	40.02	1.2942	27 47	1.3101	353 30	0.0008	0.9922
29	0.02	40.18	1.2954	27 40	1.3099	352 34	0.0588	0.9949
30	0.02	40.33	1.2966	27 33	1.3097	351 38	0.1100	0.9977
31	0.02	40.48	1.2978	27 26	1.3095	350 42	0.1556	1.0004
32	−0.02	+40.64	1.2990	27 19	1.3093	349 45	−0.1968	1.0031

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$A = \tau - 0.34241 \sin ☊ + 0.00410 \sin 2☊ - 0.02519 \sin 2☉ + 0.00294 \sin (☉ + 82° 21')$.

$B = -9''.2237 \cos ☊ + 0''.0896 \cos 2☊ - 0''.5507 \cos 2☉ - 0''.0093 \cos (☉ + 280° 39')$.

$C = -20''.4451 \cos \omega \cos ☉$.

$D = -20''.4451 \sin ☉$.

$E = -0''.0471 \sin ☊ + 0''.0015 \sin 2☊ - 0''.0034 \sin 2☉$.

$a = 46''.0813 + 20''.0549 \sin \alpha \tan \delta$.
$b = \cos \alpha \tan \delta$.
$c = \cos \alpha \sec \delta$.
$d = \sin \alpha \sec \delta$.

$a' = 20''.0549 \cos \alpha$.
$b' = -\sin \alpha$.
$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta$.
$d' = \cos \alpha \sin \delta$.

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.
τ = the time reckoned from the moment when the sun's mean longitude was 280° (Jan. 0d. + .109) as expressed in fractional parts of a tropical year.
☉ = the sun's true longitude.
☊ = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.
α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.
α = the star's apparent right ascension at the time τ.
δ = the star's apparent declination at the time τ.

$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu$.
$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'$.

The following formulæ may also be used by putting

$f = 46''.0813\ A$. $\qquad i = C \tan \omega$.
$g \cos G = 20''.0549\ A$. $\qquad h \sin H = C$
$g \sin G = B$. $\qquad h \cos H = D$.

$\alpha' - \alpha = E + f + \tau \mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta$.
$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta$.

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
21 Cassiopeæ . . .	6	0 36 54.90	+ 3.822	+74 15 35.9	+19.74
POLARIS	2	1 10 16.69	19.664	88 36 1.3	19.12
A Cassiopeæ (38) . .	6	1 21 22.60	4.345	69 34 43.2	18.72
50 Cassiopeæ . . .	4	1 52 8.06	4.969	71 46 31.3	17.70
ι Cassiopeæ . . .	4	2 18 8.65	4.833	66 48 6.3	16.50
48 Cephei (H.) . . .	6	3 3 33.23	+ 7.328	+77 14 27.3	+13.90
α Camelopardalis (9) .	4	4 40 50.71	5.910	66 6 43.2	6.80
Groombridge 966 .	6.7	5 21 57.73	7.984	74 56 55.5	+ 3.31
22 Camelopardalis (H.)	5.4	6 4 10.98	6.619	69 21 39.7	— 0.48
51 Cephei (H.) . . .	5	6 37 11.35	30.361	87 14 32.6	3.24
Piazzi vii. 67 . .	6	7 17 0.91	+ 6.317	+68 43 55.5	— 6.69
3 Ursæ Majoris (H.) .	6	7 59 32.40	6.076	68 51 39.9	10.00
σ^2 Ursæ Majoris . .	5	8 58 39.02	5.385	67 40 15.1	14.19
1 Draconis (H.) . .	4.5	9 17 52.80	9.177	81 54 36.1	15.24
24 Ursæ Majoris (*d*) .	5.4	9 22 40.08	5.439	70 24 43.4	15.46
32 Ursæ Majoris . .	6	10 8 20.48	+ 4.447	+65 46 12.1	—17.76
9 Draconis (H.) . .	5.4	10 23 42.52	5.325	76 23 46.8	18.34
λ Draconis	3.4	11 23 28.43	3.646	70 3 51.9	19.86
4 Draconis (H.) . .	5.4	12 5 56.10	2.914	78 21 18.1	20.06
κ Draconis	3.4	12 27 47.48	2.604	70 31 16.9	19.93
32 Camelop. (H.) (*foll.*)	5.4	12 48 10.97	+ 0.343	+84 8 8.1	—19.63
α Draconis	3.4	14 0 47.40	+ 1.623	65 0 42.5	17.37
5 Ursæ Minoris . .	5.4	14 27 50.48	— 0.217	76 17 12.8	16.04
β Ursæ Minoris . .	2	14 51 7.40	0.254	74 41 55.3	14.75
γ^2 Ursæ Minoris . .	3	15 20 57.67	0.150	72 18 26.5	12.80
ζ Ursæ Minoris . .	4.5	15 48 52.23	— 2.297	+78 12 7.9	—10.86
Groombridge 2320 .	6.5	16 5 58.07	+ 0.131	68 9 38.5	9.50
15 Draconis (*A*) . .	5	16 28 15.38	— 0.144	69 3 20.9	7.78
ε Ursæ Minoris . .	4.5	16 59 42.01	6.401	82 15 4.8	5.22
ω Draconis	5	17 37 43.97	0.356	68 49 7.2	1.65
ψ^1 Draconis (*pr.*) . .	4.5	17 44 18.54	— 1.084	+72 12 47.9	— 1.63
δ Ursæ Minoris . .	4.5	18 15 14.63	19.384	86 36 16.2	+ 1.34
50 Draconis	6	18 50 38.81	— 1.895	75 16 30.9	4.45
δ Draconis	3	19 12 31.00	+ 0.035	67 25 38.9	6.31
τ Draconis	5	19 18 5.57	— 1.104	73 6 27.0	6.80
ε Draconis	4	19 48 36.47	— 0.169	+69 55 43.8	+ 9.15
λ Ursæ Minoris (B.) .	6.7	19 57 12.89	58.260	88 54 35.4	9.83
κ Cephei	4.5	20 13 18.77	1.886	77 18 33.1	11.02
Groombridge 3241 .	6.7	20 30 33.33	0.210	72 4 51.5	12.23
12 Year Cat. 1879 .	6	20 53 31.49	— 2.480	80 3 5.8	13.73
β Cephei	3	21 26 55.95	+ 0.802	+69 58 36.9	+15.71
11 Cephei	5	21 39 57.83	0.908	70 41 57.0	16.50
79 Draconis	6.7	21 51 12.75	0.740	73 4 23.5	16.96
226 Cephei (B.) . . .	5.6	22 29 55.67	1.085	75 32 27.8	18.52
ι Cephei	4.3	22 44 57.06	2.117	65 30 4.5	18.85
ο Cephei	6.5	23 13 10.56	+ 2.435	+67 23 1.7	+19.62
γ Cephei	3.4	23 33 54.60	2.399	76 53 24.6	20.07
Groombridge 4163 .	7	23 48 23.54	2.845	+73 40 12.3	20.00
β Hydri	3	0 18 43.08	3.283	—78 0 15.1	+20.25
β Chamæleontis . .	5	12 10 35.93	3.333	78 34 25.8	—20.04
α Trianguli Australis	2	16 34 36.72	6.279	68 46 42.0	— 7.38
σ Octantis	6	18 0 54.67	+109.826	—89 16 43.3	+ 0.15

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Andromedæ	2	0 1 31.03	+ 3.087	+28 21 22.7	+19.91
γ Pegasi (*Algenib*)	3.2	0 6 23.37	3.082	+14 26 38.8	20.04
α Cassiopeæ	var.	0 32 58.59	3.362	+55 48 27.1	19.81
β Ceti	2	0 36 54.70	3.014	—18 43 2.4	19.81
ε Piscium	4	0 56 2.61	3.109	+ 7 10 24.0	19.46
θ¹ Ceti	3	1 17 22.55	2.998	— 8 52 14.2	+18.70
η Piscium	4.3	1 24 22.13	3.199	+14 39 32.9	18.71
α Eridani (*Achernar*)	1	1 32 45.32	2.235	—57 54 46.8	18.42
ο Piscium	4	1 38 22.43	3.161	+ 8 29 13.8	18.25
β Arietis	3.2	1 47 17.83	3.300	+20 9 23.9	17.79
α Arietis	2	1 59 40.85	3.367	+22 49 56.0	+17.24
65 Ceti (ξ¹)	4.5	2 5 57.16	3.169	+ 8 13 17.2	17.06
γ Ceti	3.4	2 36 24.68	3.102	+ 2 40 23.7	15.37
α Ceti	2.3	2 55 19.75	3.128	+ 3 33 57.6	14.36
ζ Arietis	4.5	3 7 15.65	3.436	+20 32 58.5	13.65
α Persei	2	3 14 50.41	4.246	+49 23 5.6	+13.19
δ Persei	3	3 33 27.86	4.237	+47 21 33.2	11.92
η Tauri	3	3 39 34.93	3.553	+23 41 28.9	11.47
ζ Persei	3	3 45 46.61	3.755	+31 29 9.3	11.03
γ¹ Eridani	3	3 51 49.49	2.796	—13 53 20.5	10.52
γ Tauri	4	4 12 13.61	3.407	+15 18 13.7	+ 9.06
ε Tauri	4.3	4 20 51.17	3.495	+18 52 57.3	8.38
α Tauri (*Aldebaran*)	1	4 28 17.48	3.435	+16 14 22.0	7.65
ι Aurigæ	3	4 48 20.13	3.896	+32 57 8.3	6.15
11 Orionis	5	4 56 58.30	3.425	+15 12 58.1	5.42
α Aurigæ (*Capella*)	1	5 6 52.07	4.421	+45 51 32.9	+ 4.19
β Orionis (*Rigel*)	1	5 8 8.81	2.881	— 8 21 28.0	4.48
β Tauri	2	5 17 53.15	3.787	+28 29 30.3	3.47
δ Orionis	2	5 25 12.78	3.064	— 0 24 1.6	2.99
α Leporis	3	5 26 51.94	2.646	—17 55 11.1	2.89
ε Orionis	2	5 29 27.93	3.042	— 1 17 22.4	+ 2.65
α Columbæ	2	5 34 50.10	2.173	—34 8 46.7	2.20
α Orionis	var.	5 47 58.33	3.247	+ 7 22 45.7	+ 1.05
μ Geminorum	3	6 14 54.86	3.633	+22 34 42.8	— 1.44
α Argus (*Canopus*)	1	6 21 0.09	1.330	—52 37 26.5	1.83
γ Geminorum	2.3	6 30 1.71	3.469	+16 30 35.6	— 2.66
α Canis Maj. (*Sirius*)	1	6 39 17.19	2.645	—16 32 8.5	4.63
ε Canis Majoris	2.1	6 53 24.01	2.358	—28 47 36.4	4.65
δ Canis Majoris	2	7 2 59.07	2.440	—26 11 1.9	5.43
δ Geminorum	3.4	7 12 10.71	3.591	+22 13 27.3	6.23
α Geminor. (*Castor*)	2.1	7 26 6.33	3.840	+32 10 37.5	— 7.43
α Can. Min. (*Procyon*)	1	7 32 20.39	3.146	+ 5 33 48.3	8.91
β Geminor. (*Pollux*)	1.2	7 37 10.46	3.682	+28 20 40.8	8.31
φ Geminorum	5	7 45 21.30	3.685	+27 6 25.2	8.95
15 Argus (ι)	3	8 1 52.87	2.556	—23 55 21.9	10.11
ε Hydræ	3.4	8 39 43.91	3.184	+ 6 54 17.4	—12.91
ι Ursæ Majoris	3	8 50 5.30	4.143	+48 33 41.1	13.83
κ Cancri	5	9 0 32.47	3.256	+11 12 5.2	14.22
ι Argus	2	9 13 31.74	+ 1.602	—58 43 2.2	—14.92

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Hydræ	2	9 21 3.11	+ 2.950	— 8 5 0.5	—15.38
θ Ursæ Majoris . .	3	9 23 56.68	4.054	+52 16 53.0	16.15
ε Leonis	3	9 38 17.86	3.421	+24 23 6.2	16.36
μ Leonis	4	9 45 11.62	3.425	+26 37 54.7	16.74
α Leonis (*Regulus*) .	1.2	10 1 17.22	3.204	+12 36 58.1	17.41
γ¹ Leonis	2	10 12 38.17	3.318	+20 30 46.7	—18.04
ρ Leonis	4	10 25 48.42	3.167	+ 9 59 23.4	18.41
η Argus	2	10 39 54.43	2.309	—58 59 6.5	18.75
l Leonis	5	10 42 15.81	3.160	+11 14 52.9	18.93
α Ursæ Majoris . .	2	10 55 29.74	3.765	+62 28 5.3	19.35
δ Leonis	2.3	11 7 1.94	3.203	+21 15 6.6	—19.66
δ Crateris	3.4	11 12 41.59	2.996	—14 3 33.8	19.45
τ Leonis	5	11 21 5.85	3.088	+ 3 35 18.1	19.79
91 Leonis (υ) . . .	5.4	11 30 8.39	3.072	— 0 5 23.0	19.86
β Leonis	2	11 42 16.45	3.066	+15 18 56.2	20.10
γ Ursæ Majoris . .	2.3	11 46 49.33	3.191	+54 26 3.0	—20.02
ο Virginis	4	11 58 26.09	3.061	+ 9 28 17.7	20.03
η Virginis	3.4	12 13 6.14	3.068	+ 0 4 21.2	20.05
α¹ Crucis	1	12 19 12.91	3.263	—62 21 38.4	19.93
β Corvi	2.3	12 27 24.24	3.135	—22 39 39.9	19.98
12 Canum Venaticorum	3	12 49 48.15	2.818	+39 2 14.2	—19.52
θ Virginis	4.5	13 3 3.98	3.100	— 4 49 41.6	19.34
α Virginis (*Spica*) .	1	13 18 11.38	3.152	—10 27 57.9	18.93
ζ Virginis	3.4	13 27 55.07	3.052	+ 0 5 6.7	18.54
η Ursæ Majoris . .	2	13 42 17.86	2.375	+49 58 41.0	18.11
η Bootis	3	13 48 21.15	2.859	+19 3 55.8	—18.21
β Centauri	1	13 54 27.78	4.159	—59 43 46.6	17.67
α Bootis (*Arcturus*) .	1	14 9 35.74	2.734	+19 52 35.1	18.90
θ Bootis	4.3	14 20 40.10	2.043	+52 27 59.0	16.80
α² Centauri	1	14 30 36.20	4.032	—60 16 54.2	15.05
ε Bootis	2.3	14 39 10.74	2.621	+27 38 10.7	—15.40
α² Libræ	2.3	14 43 31.48	3.306	—15 29 13.1	15.22
β Bootis	3	14 56 56.17	2.260	+40 54 58.7	14.43
β Libræ	2	15 9 51.18	3.219	— 8 53 24.3	13.57
μ¹ Bootis	4.3	15 19 28.02	2.268	+37 50 42.3	12.84
α Coronæ Borealis .	2	15 29 3.44	2.539	+27 9 51.8	—12.34
α Serpentis	2.3	15 37 43.09	2.950	+ 6 50 46.8	11.61
ε Serpentis	3.4	15 44 11.28	2.987	+ 4 52 48.5	11.13
ε Coronæ Borealis .	4	15 52 4.99	2.485	+27 15 53.3	10.67
δ Scorpii	2.3	15 52 28.38	3.535	—22 14 25.7	10.60
β¹ Scorpii	2	15 57 42.36	3.476	—19 26 19.6	—10.22
δ Ophiuchi	3	16 7 22.65	3.137	— 3 20 58.4	9.59
τ Herculis	3.4	16 15 44.53	1.798	+46 37 53.0	8.78
α Scorpii (*Antares*) .	1.2	16 21 15.41	3.668	—26 8 1.3	8.40
η Draconis	3.2	16 22 12.31	0.823	+61 48 57.7	8.22
ζ Ophiuchi	3.2	16 29 50.26	3.298	—10 17 42.1	— 7.65
η Herculis	3	16 38 20.23	2.054	+39 10 37.0	7.06
κ Ophiuchi	3.4	16 51 22.40	2.834	+ 9 35 2.7	5.89
d Herculis	5	16 56 41.65	+ 2.209	+33 45 45.9	— 5.44

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α^1 Herculis	var.	17 8 35.01	+ 2.733	+14 32 40.0	— 4.41
b Ophiuchi (44)	5	17 18 14.97	3.658	—24 2 59.4	3.75
β Draconis	3.2	17 27 25.65	1.350	+52 24 3.1	2.84
α Ophiuchi	2	17 28 45.66	2.782	+12 39 34.2	2.93
μ Herculis	3.4	17 41 15.25	2.345	+27 48 1.0	2.38
γ Draconis	2.3	17 53 31.22	1.393	+51 30 20.2	— 0.60
γ^2 Sagittarii	3.4	17 57 15.90	3.852	—30 25 21.1	— 0.47
μ^1 Sagittarii	4	18 5 48.58	3.586	—21 5 26.3	+ 0.50
η Serpentis	3	18 14 25.65	3.099	— 2 55 51.1	0.58
1 Aquilæ (3 H. Scuti)	4.5	18 27 58.11	3.264	— 8 20 4.4	2.11
α Lyræ (*Vega*)	1	18 32 26.12	2.032	+38 39 42.0	+ 3.11
β Lyræ	var.	18 45 10.17	2.214	+33 12 35.4	3.90
σ Sagittarii	2.3	18 47 1.05	3.724	—26 27 31.0	4.00
ζ Aquilæ	3	18 59 17.77	2.755	+13 40 5.4	5.06
d Sagittarii	5	19 9 51.15	3.515	—19 11 13.1	6.03
δ Aquilæ	3.4	19 18 47.49	3.025	+ 2 51 7.3	+ 6.86
κ Aquilæ	5	19 29 44.08	3.231	— 7 19 14.3	7.65
γ Aquilæ	3	19 39 56.17	2.853	+10 17 29.1	8.48
α Aquilæ (*Altair*)	1.2	19 44 17.60	2.928	+ 8 31 9.8	9.20
β Aquilæ	4	19 48 46.77	2.947	+ 6 4 36.3	8.68
τ Aquilæ	6.5	19 57 38.61	2.935	+ 6 54 16.8	+ 9.86
α^2 Capricorni	3.4	20 10 40.37	3.334	—12 57 16.8	10.83
α Pavonis	2	20 15 6.80	4.797	—57 9 27.0	11.12
π Capricorni	5	20 19 42.33	3.442	—18 38 42.6	11.50
ε Delphini	4	20 26 51.49	2.866	+10 51 10.8	11.99
α Cygni	2.1	20 36 53.88	2.044	+44 48 22.9	+12.68
μ Aquarii	5.4	20 45 28.65	3.241	— 9 28 49.1	13.21
ν Cygni	4	20 52 12.91	2.234	+40 39 23.1	13.70
61^1 Cygni	5.6	21 0 55.92	2.673	+38 5 48.4	17.46
ζ Cygni	3	21 7 16.58	2.550	+29 40 57.6	14.55
α Cephei	3.2	21 15 24.20	1.438	+62 1 20.7	+15.10
1 Pegasi	4.5	21 15 56.23	2.775	+19 14 14.1	15.22
β Aquarii	3	21 24 33.34	3.165	— 6 9 16.9	15.62
ξ Aquarii	5.4	21 30 40.17	3.199	— 8 26 56.9	15.91
ε Pegasi	2.3	21 37 39.24	2.948	+ 9 15 59.7	16.31
μ Capricorni	5	21 46 2.57	3.281	—14 10 35.0	+16.74
α Aquarii	3	21 58 57.11	3.084	— 0 57 52.8	17.32
α Gruis	2	21 59 50.30	3.816	—47 36 11.5	17.18
θ Aquarii	4.5	22 9 48.83	3.171	— 8 26 39.8	17.75
π Aquarii	5.4	22 18 29.05	3.065	+ 0 42 12.0	18.11
η Aquarii	4.3	22 28 31.27	3.084	— 0 48 7.5	+18.42
ζ Pegasi	3.4	22 34 49.71	2.988	+10 8 16.7	18.69
λ Aquarii	4	22 45 40.40	3.131	— 8 17 11.8	19.04
α Pis.Aus.(*Fomalhaut*)	1.2	22 50 17.74	3.330	—30 19 34.8	18.97
α Pegasi (*Markab*)	2	22 58 8.23	2.984	+14 29 26.1	19.32
θ Piscium	4.5	23 21 13.29	3.041	+ 5 38 54.8	+19.71
ι Piscium	4.5	23 33 6.65	3.084	+ 4 54 20.1	19.47
ω Piscium	4	23 52 28.97	+ 3.078	+ 6 7 36.8	+19.91

APPARENT PLACES OF *α* URSÆ MINORIS, (*Polaris,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 10	° ′ 88 36		h m 1 10	° ′ 88 36		h m 1 9	° ′ 88 36		h m 1 9	° ′ 88 35
	s	″		s	″		s	″		s	″
1.3	49.33	18.4	1.2	22.30	18.2	1.1	62.21	13.1	1.0	51.94	64.0
2.3	48.57	18.5	2.2	21.42	18.2	2.1	61.59	12.8	2.0	51.81	63.6
3.3	47.78	18.6	3.2	20.51	18.1	3.1	60.97	12.6	3.0	51.73	63.3
4.3	46.94	18.7	4.2	19.59	18.0	4.1	60.33	12.3	4.0	51.70	62.9
5.3	46.06	18.8	5.2	18.65	17.8	5.1	59.72	12.1	5.0	51.75	62.6
6.3	45.12	18.9	6.2	17.75	17.7	6.1	59.15	11.8	6.0	51.84	62.2
7.2	44.15	19.0	7.2	16.90	17.5	7.1	58.64	11.5	7.0	51.99	61.9
8.2	43.15	19.1	8.2	16.10	17.3	8.1	58.20	11.1	8.0	52.14	61.6
9.2	42.15	19.1	9.2	15.35	17.1	9.1	57.82	10.8	9.0	52.28	61.3
10.2	41.18	19.1	10.2	14.65	16.9	10.1	57.49	10.5	10.0	52.40	61.0
11.2	40.25	19.1	11.2	13.99	16.8	11.1	57.19	10.2	11.0	52.49	60.8
12.2	39.38	19.1	12.2	13.35	16.6	12.1	56.88	10.0	12.0	52.53	60.5
13.2	38.55	19.1	13.1	12.69	16.5	13.1	56.56	9.7	13.0	52.57	60.2
14.2	37.75	19.1	14.1	11.99	16.3	14.1	56.21	9.5	14.0	52.60	59.9
15.2	36.98	19.1	15.1	11.26	16.2	15.1	55.81	9.2	15.0	52.64	59.6
16.2	36.18	19.1	16.1	10.48	16.0	16.1	55.40	8.9	16.0	52.73	59.2
17.2	35.37	19.1	17.1	9.69	15.8	17.1	54.97	8.6	17.0	52.89	58.9
18.2	34.51	19.1	18.1	8.89	15.6	18.1	54.54	8.3	18.0	53.12	58.5
19.2	33.60	19.1	19.1	8.07	15.4	19.1	54.16	8.0	19.0	53.42	58.2
20.2	32.64	19.1	20.1	7.30	15.2	20.1	53.83	7.7	20.0	53.76	57.9
21.2	31.65	19.1	21.1	6.59	14.9	21.1	53.57	7.3	21.0	54.14	57.6
22.2	30.65	19.1	22.1	5.95	14.7	22.0	53.37	7.0	22.0	54.50	57.3
23.2	29.68	19.0	23.1	5.38	14.4	23.0	53.22	6.6	23.0	54.85	57.0
24.2	28.73	18.9	24.1	4.83	14.2	24.0	53.12	6.3	24.0	55.18	56.8
25.2	27.82	18.8	25.1	4.33	13.9	25.0	53.04	6.0	25.0	55.46	56.6
26.2	26.98	18.7	26.1	3.84	13.7	26.0	52.95	5.7	25.9	55.72	56.3
27.2	26.19	18.6	27.1	3.32	13.5	27.0	52.84	5.5	26.9	55.97	56.0
28.2	25.42	18.5	28.1	2.79	13.3	28.0	52.71	5.2	27.9	56.21	55.8
29.2	24.68	18.4	29.1	2.21	13.1	29.0	52.52	4.9	28.9	56.50	55.5
30.2	23.91	18.4	30.1	1.59	12.8	30.0	52.33	4.6	29.9	56.82	55.1
31.2	23.12	18.3	31.1	0.97	12.6	31.0	52.13	4.3	30.9	57.21	54.8
32.2	22.30	18.2	32.1	0.33	12.3	32.0	51.94	4.0	31.9	57.67	54.5

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.
	h m 1 9	° ′ 88 35		h m 1 10	° ′ 88 35		h m 1 10	° ′ 88 35		h m 1 11	° ′ 88 35
	s	″		s	″		s	″		s	″
1.9	57.67	54.5	1.9	17.01	48.1	1.8	42.36	46.6	1.7	8.70	50.1
2.9	58.17	54.2	2.8	17.86	48.0	2.8	43.19	46.7	2.7	9.41	50.3
3.9	58.72	54.0	3.8	18.67	47.9	3.8	44.00	46.8	3.7	10.15	50.5
4.9	59.30	53.7	4.8	19.43	47.8	4.8	44.78	46.8	4.7	10.93	50.6
5.9	59.86	53.5	5.8	20.14	47.8	5.8	45.55	46.9	5.7	11.75	50.8
6.9	60.39	53.3	6.8	20.85	47.7	6.8	46.35	46.9	6.7	12.60	51.0
7.9	60.91	53.0	7.8	21.54	47.6	7.8	47.19	46.9	7.7	13.48	51.2
8.9	61.38	52.8	8.8	22.26	47.4	8.7	48.08	46.9	8.7	14.36	51.4
9.9	61.83	52.6	9.8	23.01	47.3	9.7	49.03	46.9	9.7	15.21	51.7
10.9	62.26	52.4	10.8	23.80	47.2	10.7	49.99	47.0	10.7	16.01	51.9
11.9	62.69	52.2	11.8	24.65	47.1	11.7	51.00	47.1	11.7	16.76	52.2
12.9	63.17	51.9	12.8	25.56	47.0	12.7	51.98	47.2	12.7	17.44	52.5
13.9	63.70	51.6	13.8	26.49	46.9	13.7	52.94	47.3	13.7	18.09	52.8
14.9	64.29	51.4	14.8	27.45	46.8	14.7	53.85	47.5	14.6	18.70	53.0
15.9	64.94	51.1	15.8	28.38	46.8	15.7	54.70	47.6	15.6	19.29	53.3
16.9	65.62	50.9	16.8	29.29	46.7	16.7	55.50	47.7	16.6	19.92	53.5
17.9	66.37	50.7	17.8	30.16	46.7	17.7	56.28	47.8	17.6	20.57	53.7
18.9	67.12	50.5	18.8	30.97	46.7	18.7	57.02	48.0	18.6	21.26	53.9
19.9	67.85	50.3	19.8	31.74	46.7	19.7	57.78	48.0	19.6	22.00	54.1
20.9	68.55	50.1	20.8	32.50	46.7	20.7	58.57	48.1	20.6	22.75	54.4
21.9	69.22	50.0	21.8	33.25	46.7	21.7	59.39	48.2	21.6	23.54	54.7
22.9	69.83	49.8	22.8	34.04	46.6	22.7	60.27	48.3	22.6	24.31	55.0
23.9	70.42	49.7	23.8	34.85	46.6	23.7	61.19	48.5	23.6	25.04	55.3
24.9	70.99	49.5	24.8	35.72	46.5	24.7	62.13	48.6	24.6	25.72	55.6
25.9	71.58	49.3	25.8	36.65	46.5	25.7	63.09	48.8	25.6	26.34	55.9
26.9	72.21	49.1	26.8	37.60	46.5	26.7	64.02	49.0	26.6	26.90	56.2
27.9	72.89	48.9	27.8	38.59	46.5	27.7	64.92	49.2	27.6	27.42	56.5
28.9	73.63	48.7	28.8	39.59	46.5	28.7	65.77	49.4	28.6	27.91	56.8
29.9	74.44	48.6	29.8	40.56	46.5	29.7	66.55	49.6	29.6	28.39	57.1
30.9	75.29	48.4	30.8	41.48	46.6	30.7	67.30	49.8	30.6	28.89	57.4
31.9	76.16	48.3	31.8	42.36	46.6	31.7	68.01	49.9	31.6	29.43	57.7
32.9	77.01	48.1	32.8	43.19	46.7	32.7	68.70	50.1	32.6	30.02	57.9

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 11	° ′ 88 35		h m 1 11	° ′ 88 36		h m 1 11	° ′ 88 36		h m 1 11	° ′ 88 36
	s	″		s	″		s	″		s	″
1.6	30.02	57.9	1.5	41.94	8.3	1.4	42.09	20.0	1.3	29.20	29.8
2.6	30.64	58.2	2.5	42.25	8.7	2.4	41.80	20.4	2.3	28.46	30.1
3.6	31.28	58.5	3.5	42.52	9.1	3.4	41.47	20.8	3.3	27.73	30.3
4.6	31.93	58.8	4.5	42.73	9.5	4.4	41.12	21.2	4.3	27.02	30.6
5.6	32.54	59.2	5.5	42.89	9.9	5.4	40.74	21.5	5.3	26.34	30.8
6.6	33.12	59.5	6.5	42.98	10.4	6.4	40.38	21.9	6.3	25.71	31.0
7.6	33.65	59.9	7.5	43.02	10.7	7.4	40.02	22.2	7.3	25.11	31.2
8.6	34.11	60.3	8.5	43.03	11.1	8.4	39.71	22.5	8.3	24.52	31.4
9.6	34.52	60.6	9.5	43.03	11.5	9.4	39.44	22.8	9.3	23.94	31.7
10.6	34.89	61.0	10.5	43.05	11.9	10.4	39.18	23.1	10.3	23.32	31.9
11.6	35.22	61.3	11.5	43.09	12.2	11.4	38.94	23.5	11.3	22.67	32.2
12.6	35.57	61.6	12.5	43.17	12.5	12.4	38.70	23.8	12.3	21.96	32.4
13.6	35.93	61.9	13.5	43.29	12.9	13.4	38.41	24.2	13.3	21.18	32.7
14.6	36.33	62.3	14.5	43.43	13.2	14.4	38.06	24.6	14.3	20.36	32.9
15.6	36.79	62.6	15.5	43.58	13.6	15.4	37.66	24.9	15.3	19.51	33.1
16.6	37.27	62.9	16.5	43.68	14.0	16.4	37.18	25.3	16.3	18.63	33.3
17.6	37.78	63.2	17.5	43.76	14.4	17.4	36.67	25.6	17.3	17.77	33.5
18.6	38.28	63.6	18.5	43.77	14.8	18.4	36.11	26.0	18.3	16.93	33.6
19.6	38.73	64.0	19.5	43.72	15.2	19.4	35.53	26.3	19.3	16.12	33.8
20.5	39.13	64.3	20.5	43.60	15.6	20.4	34.97	26.6	20.3	15.35	33.9
21.5	39.48	64.7	21.5	43.46	16.0	21.4	34.44	26.8	21.3	14.61	34.0
22.5	39.75	65.1	22.5	43.27	16.4	22.4	33.95	27.1	22.3	13.90	34.2
23.5	39.98	65.5	23.5	43.09	16.8	23.4	33.51	27.4	23.3	13.20	34.3
24.5	40.17	65.9	24.5	42.92	17.1	24.4	33.06	27.7	24.3	12.47	34.5
25.5	40.34	66.3	25.5	42.78	17.5	25.4	32.65	28.0	25.3	11.69	34.7
26.5	40.55	66.6	26.4	42.68	17.8	26.4	32.20	28.3	26.3	10.87	34.9
27.5	40.77	67.0	27.4	42.62	18.1	27.4	31.72	28.6	27.3	9.97	35.0
28.5	41.02	67.3	28.4	42.56	18.5	28.4	31.18	28.9	28.3	9.04	35.2
29.5	41.31	67.6	29.4	42.51	18.9	29.4	30.57	29.2	29.3	8.07	35.3
30.5	41.60	68.0	30.4	42.41	19.2	30.4	29.90	29.5	30.3	7.08	35.4
31.5	41.94	68.3	31.4	42.27	19.6	31.3	29.20	29.8	31.3	6.13	35.5
32.5	42.25	68.7	32.4	42.09	20.0	32.3	28.46	30.1	32.3	5.22	35.6

APPARENT PLACES OF ε URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
d	h m 16 59	° ′ 82 14		h m 16 59	° ′ 82 14		h m 16 59	° ′ 82 14		h m 16 59	° ′ 82 14
	s	″		s	″		s	″		s	″
0.9	31.78	65.6	1.8	34.85	56.5	1.8	39.13	52.8	1.7	44.03	54.6
1.9	31.82	65.3	2.8	34.98	56.2	2.8	39.29	52.7	2.7	44.18	54.7
2.9	31.89	64.9	3.8	35.12	56.0	3.8	39.46	52.7	3.7	44.33	54.9
3.9	31.92	64.6	4.8	35.27	55.7	4.8	39.64	52.6	4.7	44.47	55.1
4.9	31.97	64.3	5.8	35.42	55.5	5.8	39.81	52.6	5.7	44.61	55.3
5.9	32.04	63.9	6.8	35.58	55.3	6.7	39.99	52.6	6.7	44.74	55.5
6.9	32.10	63.5	7.8	35.73	55.2	7.7	40.16	52.6	7.7	44.87	55.8
7.9	32.18	63.2	8.8	35.89	55.0	8.7	40.33	52.7	8.7	44.98	56.0
8.9	32.27	62.8	9.8	36.03	54.9	9.7	40.47	52.7	9.7	45.10	56.2
9.9	32.36	62.5	10.8	36.18	54.8	10.7	40.65	52.8	10.7	45.22	56.3
10.9	32.46	62.2	11.8	36.32	54.6	11.7	40.80	52.8	11.7	45.33	56.5
11.9	32.55	61.8	12.8	36.45	54.5	12.7	40.95	52.8	12.7	45.45	56.7
12.9	32.64	61.6	13.8	36.60	54.3	13.7	41.10	52.9	13.6	45.58	56.8
13.9	32.73	61.4	14.8	36.74	54.2	14.7	41.25	52.9	14.6	45.71	57.0
14.9	32.82	61.1	15.8	36.89	54.0	15.7	41.41	52.9	15.6	45.85	57.2
15.9	32.90	60.8	16.8	37.04	53.9	16.7	41.57	52.9	16.6	45.98	57.5
16.9	32.99	60.5	17.8	37.20	53.7	17.7	41.74	53.0	17.6	46.10	57.7
17.9	33.08	60.2	18.8	37.37	53.5	18.7	41.91	53.0	18.6	46.21	58.0
18.9	33.17	59.9	19.8	37.54	53.4	19.7	42.08	53.0	19.6	46.32	58.3
19.9	33.28	59.6	20.8	37.71	53.3	20.7	42.25	53.1	20.6	46.42	58.6
20.9	33.38	59.3	21.8	37.88	53.2	21.7	42.42	53.2	21.6	46.51	58.8
21.9	33.50	59.0	22.8	38.04	53.2	22.7	42.57	53.4	22.6	46.60	59.1
22.9	33.62	58.7	23.8	38.21	53.1	23.7	42.72	53.5	23.6	46.69	59.4
23.9	33.74	58.4	24.8	38.36	53.1	24.7	42.87	53.6	24.6	46.78	59.6
24.9	33.87	58.2	25.8	38.51	53.1	25.7	43.01	53.8	25.6	46.87	59.8
25.9	34.01	58.0	26.8	38.66	53.0	26.7	43.14	53.9	26.6	46.97	60.0
26.9	34.13	57.8	27.8	38.81	52.9	27.7	43.28	54.0	27.6	47.06	60.3
27.9	34.25	57.6	28.8	38.97	52.9	28.7	43.43	54.1	28.6	47.16	60.5
28.8	34.37	57.4	29.8	39.13	52.8	29.7	43.57	54.2	29.6	47.26	60.8
29.8	34.49	57.1	30.8	39.29	52.7	30.7	43.72	54.3	30.6	47.35	61.1
30.8	34.60	56.9	31.8	39.46	52.7	31.7	43.87	54.4	31.6	47.44	61.4
31.8	34.73	56.7	32.8	39.64	52.6	32.7	44.03	54.6	32.6	47.52	61.7

APPARENT PLACES OF ε URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15
	s	″		s	″		s	″		s	″
1.6	47.44	1.4	1.5	48.55	11.2	1.4	47.09	20.3	1.3	43.42	26.9
2.6	47.52	1.7	2.5	48.52	11.5	2.4	47.00	20.5	2.3	43.29	27.1
3.6	47.60	2.0	3.5	48.50	11.8	3.4	46.91	20.7	3.3	43.15	27.2
4.6	47.66	2.4	4.5	48.48	12.1	4.4	46.82	21.0	4.3	43.01	27.4
5.6	47.71	2.7	5.5	48.46	12.4	5.4	46.74	21.2	5.3	42.87	27.5
6.6	47.76	3.0	6.5	48.44	12.7	6.4	46.65	21.4	6.3	42.72	27.7
7.6	47.81	3.3	7.5	48.42	13.0	7.4	46.57	21.7	7.3	42.56	27.9
8.6	47.87	3.6	8.5	48.41	13.3	8.4	46.48	22.0	8.3	42.40	28.1
9.6	47.92	3.8	9.5	48.40	13.6	9.4	46.38	22.2	9.3	42.23	28.2
10.6	47.98	4.1	10.5	48.38	13.9	10.4	46.28	22.5	10.3	42.06	28.3
11.6	48.05	4.3	11.5	48.35	14.2	11.4	46.16	22.8	11.3	41.89	28.4
12.6	48.11	4.6	12.5	48.32	14.6	12.4	46.04	23.1	12.3	41.72	28.5
13.6	48.17	4.9	13.5	48.28	14.9	13.4	45.92	23.3	13.3	41.56	28.6
14.6	48.23	5.2	14.5	48.23	15.3	14.4	45.79	23.6	14.3	41.40	28.6
15.6	48.27	5.6	15.5	48.17	15.6	15.4	45.67	23.8	15.3	41.24	28.7
16.6	48.31	6.0	16.5	48.11	15.9	16.4	45.55	24.0	16.3	41.09	28.8
17.6	48.35	6.3	17.5	48.05	16.2	17.4	45.43	24.1	17.3	40.94	28.8
18.5	48.37	6.7	18.5	47.99	16.5	18.4	45.31	24.3	18.3	40.78	28.9
19.5	48.39	7.0	19.5	47.94	16.8	19.4	45.20	24.5	19.3	40.62	29.0
20.5	48.41	7.3	20.5	47.88	17.0	20.4	45.09	24.7	20.3	40.45	29.2
21.5	48.42	7.6	21.5	47.83	17.3	21.4	44.97	24.9	21.3	40.30	29.3
22.5	48.44	7.9	22.5	47.78	17.6	22.4	44.85	25.1	22.3	40.12	29.3
23.5	48.46	8.2	23.4	47.73	17.9	23.4	44.72	25.4	23.3	39.92	29.4
24.5	48.48	8.5	24.4	47.67	18.2	24.4	44.59	25.6	24.3	39.73	29.5
25.5	48.50	8.8	25.4	47.61	18.5	25.4	44.45	25.8	25.3	39.55	29.5
26.5	48.53	9.1	26.4	47.54	18.8	26.4	44.30	26.0	26.3	39.37	29.5
27.5	48.55	9.4	27.4	47.46	19.1	27.4	44.15	26.2	27.3	39.20	29.5
28.5	48.56	9.7	28.4	47.38	19.4	28.4	44.00	26.4	28.3	39.03	29.5
29.5	48.57	10.1	29.4	47.28	19.7	29.4	43.85	26.5	29.3	38.87	29.5
30.5	48.57	10.5	30.4	47.19	20.0	30.4	43.70	26.7	30.3	38.71	29.5
31.5	48.56	10.8	31.4	47.09	20.3	31.3	43.56	26.8	31.3	38.54	29.5
32.5	48.55	11.2	32.4	47.00	20.5	32.3	43.42	26.9	32.3	38.38	29.6

APPARENT PLACES OF ε URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15		h m 16 59	° ′ 82 15
	s	″		s	″		s	″		s	″
1.3	38.38	29.6	1.2	33.13	27.6	1.1	28.51	21.1	1.0	25.99	11.4
2.3	38.21	29.6	2.2	32.95	27.5	2.1	28.38	20.8	2.0	25.96	11.0
3.3	38.03	29.6	3.2	32.77	27.4	3.1	28.26	20.5	3.0	25.93	10.6
4.3	37.84	29.7	4.2	32.60	27.2	4.1	28.15	20.2	4.0	25.91	10.2
5.2	37.66	29.7	5.2	32.42	27.1	5.1	28.04	19.8	5.0	25.89	9.9
6.2	37.47	29.7	6.2	32.25	26.9	6.1	27.94	19.5	6.0	25.87	9.5
7.2	37.28	29.7	7.2	32.08	26.6	7.1	27.85	19.2	7.0	25.85	9.2
8.2	37.09	29.6	8.2	31.93	26.4	8.1	27.75	18.9	8.0	25.82	8.9
9.2	36.91	29.5	9.2	31.78	26.2	9.1	27.65	18.6	9.0	25.80	8.6
10.2	36.74	29.5	10.2	31.63	26.0	10.1	27.55	18.4	10.0	25.77	8.2
11.2	36.57	29.4	11.2	31.49	25.9	11.1	27.45	18.1	11.0	25.74	7.9
12.2	36.40	29.3	12.2	31.34	25.7	12.1	27.35	17.8	12.0	25.72	7.5
13.2	36.24	29.3	13.1	31.19	25.5	13.1	27.25	17.5	13.0	25.70	7.1
14.2	36.07	29.2	14.1	31.04	25.4	14.1	27.14	17.2	14.0	25.70	6.7
15.2	35.90	29.2	15.1	30.88	25.2	15.1	27.04	16.9	15.0	25.70	6.3
16.2	35.72	29.1	16.1	30.72	25.0	16.1	26.95	16.5	16.0	25.71	5.9
17.2	35.55	29.1	17.1	30.55	24.8	17.0	26.86	16.2	17.0	25.73	5.5
18.2	35.36	29.1	18.1	30.39	24.6	18.0	26.78	15.8	18.0	25.75	5.2
19.2	35.18	29.0	19.1	30.24	24.4	19.0	26.72	15.5	19.0	25.77	4.8
20.2	34.99	29.0	20.1	30.09	24.1	20.0	26.66	15.1	20.0	25.80	4.5
21.2	34.80	28.8	21.1	29.95	23.8	21.0	26.60	14.8	21.0	25.82	4.2
22.2	34.62	28.7	22.1	29.81	23.5	22.0	26.54	14.4	22.0	25.84	3.8
23.2	34.44	28.6	23.1	29.68	23.3	23.0	26.48	14.1	23.0	25.85	3.5
24.2	34.27	28.4	24.1	29.56	23.0	24.0	26.41	13.8	23.9	25.87	3.2
25.2	34.11	28.3	25.1	29.44	22.8	25.0	26.34	13.5	24.9	25.89	2.8
26.2	33.95	28.2	26.1	29.31	22.6	26.0	26.28	13.2	25.9	25.91	2.5
27.2	33.79	28.0	27.1	29.18	22.3	27.0	26.21	12.9	26.9	25.94	2.1
28.2	33.63	27.9	28.1	29.05	22.1	28.0	26.14	12.5	27.9	25.97	1.7
29.2	33.47	27.8	29.1	28.91	21.9	29.0	26.08	12.2	28.9	26.02	1.3
30.2	33.30	27.7	30.1	28.77	21.6	30.0	26.03	11.8	29.9	26.08	0.9
31.2	33.13	27.6	31.1	28.64	21.4	31.0	25.99	11.4	30.9	26.14	0.6
32.2	32.95	27.5	32.1	28.51	21.1	32.0	25.96	11.0	31.9	26.20	0.2

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 18 14	° ′ 86 36		h m 18 14	° ′ 86 36		h m 18 15	° ′ 86 36		h m 18 15	° ′ 86 36
	s	″		s	″		s	″		s	″
1.0	52.71	23.8	1.9	55.89	13.6	1.8	3.74	7.6	1.7	14.88	6.1
2.0	52.69	23.5	2.9	56.08	13.2	2.8	4.06	7.4	2.7	15.26	6.2
3.0	52.66	23.2	3.9	56.29	12.9	3.8	4.40	7.2	3.7	15.66	6.2
4.0	52.64	22.8	4.9	56.52	12.6	4.8	4.77	7.1	4.7	16.05	6.3
5.0	52.61	22.5	5.9	56.78	12.3	5.8	5.14	6.9	5.7	16.42	6.5
6.0	52.60	22.1	6.9	57.03	12.1	6.8	5.53	6.8	6.7	16.77	6.6
7.0	52.61	21.7	7.9	57.31	11.8	7.8	5.91	6.7	7.7	17.11	6.7
8.0	52.65	21.4	8.9	57.60	11.6	8.8	6.29	6.7	8.7	17.42	6.8
9.0	52.71	21.0	9.9	57.86	11.4	9.8	6.66	6.6	9.7	17.74	6.9
10.0	52.79	20.6	10.9	58.13	11.2	10.8	7.02	6.5	10.7	18.05	7.0
11.0	52.88	20.3	11.9	58.38	11.0	11.8	7.35	6.5	11.7	18.36	7.1
11.9	52.97	20.0	12.9	58.62	10.8	12.8	7.68	6.4	12.7	18.68	7.2
12.9	53.07	19.6	13.9	58.87	10.5	13.8	8.01	6.4	13.7	19.01	7.3
13.9	53.17	19.4	14.9	59.10	10.3	14.8	8.33	6.3	14.7	19.37	7.4
14.9	53.26	19.1	15.9	59.36	10.1	15.8	8.67	6.2	15.7	19.72	7.5
15.9	53.34	18.8	16.9	59.62	9.8	16.8	9.03	6.1	16.7	20.07	7.6
16.9	53.41	18.5	17.8	59.91	9.6	17.8	9.40	6.1	17.7	20.43	7.8
17.9	53.50	18.1	18.8	60.23	9.3	18.8	9.79	6.0	18.7	20.77	8.0
18.9	53.58	17.8	19.8	60.56	9.1	19.8	10.18	5.9	19.7	21.11	8.2
19.9	53.67	17.4	20.8	60.88	8.9	20.8	10.59	5.9	20.7	21.42	8.4
20.9	53.78	17.1	21.8	61.23	8.7	21.8	10.98	5.9	21.7	21.71	8.6
21.9	53.92	16.7	22.8	61.57	8.6	22.8	11.37	5.9	22.7	21.97	8.8
22.9	54.08	16.4	23.8	61.91	8.4	23.8	11.74	6.0	23.7	22.24	8.9
23.9	54.25	16.1	24.8	62.23	8.3	24.8	12.10	6.0	24.7	22.51	9.1
24.9	54.45	15.8	25.8	62.53	8.2	25.7	12.43	6.0	25.7	22.77	9.3
25.9	54.66	15.5	26.8	62.83	8.1	26.7	12.77	6.1	26.7	23.05	9.4
26.9	54.85	15.2	27.8	63.13	7.9	27.7	13.10	6.1	27.7	23.35	9.6
27.9	55.04	14.9	28.8	63.42	7.7	28.7	13.43	6.1	28.7	23.65	9.7
28.9	55.22	14.7	29.8	63.74	7.6	29.7	13.77	6.1	29.7	23.95	9.9
29.9	55.38	14.4	30.8	64.06	7.4	30.7	14.12	6.1	30.7	24.24	10.1
30.9	55.55	14.2	31.8	64.40	7.2	31.7	14.50	6.1	31.6	24.54	10.4
31.9	55.72	13.9	32.8	64.77	7.1	32.7	14.88	6.1	32.6	24.82	10.6

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
	1 15	86 36		1 15	86 36		1 15	86 36		1 15	86 36
	s	″		s	″		s	″		s	″
1.6	24.54	10.4	1.6	30.10	18.9	1.5	29.77	28.4	1.4	23.75	37.1
2.6	24.82	10.6	2.6	30.15	19.2	2.5	29.64	28.7	2.4	23.49	37.3
3.6	25.09	10.9	3.6	30.21	19.5	3.5	29.50	29.0	3.4	23.24	37.6
4.6	25.33	11.1	4.6	30.24	19.8	4.5	29.38	29.3	4.4	23.00	37.8
5.6	25.56	11.4	5.6	30.28	20.1	5.5	29.26	29.5	5.4	22.74	38.0
6.6	25.77	11.7	6.6	30.33	20.4	6.5	29.18	29.8	6.4	22.46	38.3
7.6	25.97	11.9	7.5	30.39	20.7	7.5	29.06	30.1	7.4	22.17	38.6
8.6	26.17	12.1	8.5	30.46	20.9	8.5	28.95	30.4	8.4	21.85	38.8
9.6	26.37	12.3	9.5	30.52	21.2	9.5	28.83	30.8	9.4	21.51	39.1
10.6	26.58	12.5	10.5	30.59	21.6	10.5	28.70	31.1	10.4	21.18	39.3
11.6	26.80	12.8	11.5	30.66	21.9	11.5	28.54	31.4	11.4	20.82	39.5
12.6	27.04	13.0	12.5	30.70	22.2	12.5	28.36	31.8	12.4	20.47	39.7
13.6	27.27	13.2	13.5	30.72	22.6	13.4	28.16	32.1	13.4	20.12	39.9
14.6	27.50	13.5	14.5	30.73	23.0	14.4	27.94	32.4	14.4	19.78	40.0
15.6	27.74	13.8	15.5	30.70	23.3	15.4	27.72	32.7	15.4	19.47	40.2
16.6	27.93	14.1	16.5	30.66	23.7	16.4	27.52	32.9	16.4	19.15	40.4
17.6	28.11	14.4	17.5	30.62	24.0	17.4	27.31	33.2	17.4	18.84	40.5
18.6	28.28	14.7	18.5	30.56	24.3	18.4	27.11	33.4	18.4	18.53	40.7
19.6	28.42	15.0	19.5	30.51	24.6	19.4	26.92	33.7	19.3	18.21	40.9
20.6	28.56	15.3	20.5	30.47	24.8	20.4	26.72	33.9	20.3	17.88	41.2
21.6	28.68	15.6	21.5	30.44	25.1	21.4	26.54	34.2	21.3	17.52	41.4
22.6	28.80	15.9	22.5	30.43	25.4	22.4	26.35	34.5	22.3	17.16	41.6
23.6	28.92	16.1	23.5	30.40	25.7	23.4	26.16	34.8	23.3	16.76	41.8
24.6	29.06	16.4	24.5	30.38	26.0	24.4	25.94	35.1	24.3	16.37	41.9
25.6	29.21	16.6	25.5	30.36	26.4	25.4	25.71	35.4	25.3	15.97	42.1
26.6	29.37	16.9	26.5	30.31	26.7	26.4	25.44	35.7	26.3	15.57	42.2
27.6	29.52	17.2	27.5	30.25	27.1	27.4	25.16	36.0	27.3	15.17	42.3
28.6	29.67	17.5	28.5	30.16	27.5	28.4	24.87	36.2	28.3	14.79	42.4
29.6	29.81	17.8	29.5	30.04	27.8	29.4	24.57	36.5	29.3	14.43	42.5
30.6	29.93	18.2	30.5	29.91	28.1	30.4	24.29	36.7	30.3	14.07	42.7
31.6	30.03	18.5	31.5	29.77	28.4	31.4	24.01	36.9	31.3	13.71	42.8
32.6	30.10	18.9	32.5	29.64	28.7	32.4	23.75	37.1	32.3	13.37	42.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 15	° ' 86 36		h m 1 14	° ' 86 36		h m 1 14	° ' 86 36		h m 1 14	° ' 86 36
	s	"		s	"		s	"		s	"
1.3	13.37	42.9	1.2	61.02	44.6	1.1	48.38	41.7	1.1	39.14	34.5
2.3	13.00	43.1	2.2	60.58	44.6	2.1	47.97	41.5	2.1	38.92	34.1
3.3	12.63	43.2	3.2	60.13	44.6	3.1	47.59	41.3	3.1	38.73	33.8
4.3	12.24	43.4	4.2	59.67	44.6	4.1	47.22	41.1	4.1	38.54	33.5
5.3	11.82	43.5	5.2	59.21	44.6	5.1	46.87	40.8	5.1	38.38	33.2
6.3	11.38	43.7	6.2	58.76	44.5	6.1	46.54	40.6	6.1	38.21	32.9
7.3	10.94	43.8	7.2	58.31	44.4	7.1	46.21	40.4	7.0	38.05	32.6
8.3	10.51	43.8	8.2	57.89	44.3	8.1	45.90	40.2	8.0	37.87	32.3
9.3	10.07	43.9	9.2	57.49	44.2	9.1	45.60	40.0	9.0	37.69	32.0
10.3	9.65	43.9	10.2	57.10	44.1	10.1	45.27	39.8	10.0	37.49	31.8
11.3	9.26	44.0	11.2	56.71	44.1	11.1	44.94	39.6	11.0	37.30	31.5
12.3	8.87	44.0	12.2	56.32	44.0	12.1	44.60	39.5	12.0	37.11	31.2
13.3	8.49	44.1	13.2	55.93	44.0	13.1	44.24	39.3	13.0	36.92	30.8
14.3	8.11	44.1	14.2	55.54	43.9	14.1	43.89	39.0	14.0	36.75	30.4
15.3	7.74	44.2	15.2	55.13	43.9	15.1	43.53	38.8	15.0	36.60	30.1
16.3	7.35	44.3	16.2	54.70	43.8	16.1	43.20	38.5	16.0	36.48	29.7
17.3	6.94	44.4	17.2	54.25	43.8	17.1	42.86	38.3	17.0	36.38	29.3
18.3	6.51	44.5	18.2	53.82	43.7	18.1	42.56	38.0	18.0	36.29	29.0
19.3	6.07	44.6	19.2	53.38	43.5	19.1	42.28	37.7	19.0	36.22	28.7
20.3	5.62	44.6	20.2	52.95	43.4	20.1	42.02	37.4	20.0	36.15	28.3
21.3	5.16	44.6	21.2	52.54	43.2	21.1	41.76	37.1	21.0	36.07	28.0
22.3	4.71	44.6	22.2	52.15	43.1	22.1	41.52	36.9	22.0	35.99	27.7
23.3	4.27	44.6	23.2	51.77	42.9	23.1	41.28	36.6	23.0	35.90	27.4
24.3	3.84	44.6	24.2	51.40	42.7	24.1	41.03	36.4	24.0	35.79	27.1
25.2	3.42	44.6	25.2	51.05	42.6	25.1	40.77	36.2	25.0	35.69	26.8
26.2	3.03	44.6	26.2	50.70	42.5	26.1	40.49	35.9	26.0	35.60	26.4
27.2	2.63	44.6	27.2	50.34	42.4	27.1	40.21	35.7	27.0	35.52	26.1
28.2	2.24	44.6	28.2	49.97	42.2	28.1	39.93	35.4	28.0	35.46	25.7
29.2	1.85	44.6	29.2	49.59	42.1	29.1	39.65	35.1	29.0	35.41	25.3
30.2	1.45	44.6	30.2	49.18	42.0	30.1	39.39	34.8	30.0	35.40	24.9
31.2	1.02	44.6	31.2	48.78	41.8	31.1	39.14	34.5	31.0	35.39	24.6
32.2	0.58	44.6	32.1	48.38	41.7	32.1	38.92	34.1	32.0	35.40	24.2

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 56	° ′ 88 54		h m 19 56	° ′ 88 54		h m 19 56	° ′ 88 54		h m 19 56	° ′ 88 54
	s	″		s	″		s	″		s	″
1.1	22.79	50.6	1.0	15.99	40.7	1.9	28.93	32.1	1.8	57.96	26.6
2.1	22.26	50.3	2.0	16.02	40.4	2.9	29.59	31.8	2.8	59.14	26.5
3.1	21.69	50.0	3.0	16.07	40.0	3.9	30.30	31.5	3.8	60.35	26.4
4.1	21.10	49.8	4.0	16.19	39.7	4.9	31.08	31.2	4.8	61.58	26.3
5.0	20.50	49.5	5.0	16.39	39.3	5.9	31.93	31.0	5.8	62.78	26.3
6.0	19.91	49.1	6.0	16.66	38.9	6.9	32.86	30.7	6.8	63.94	26.3
7.0	19.36	48.8	7.0	17.01	38.6	7.9	33.81	30.5	7.8	65.05	26.2
8.0	18.89	48.4	8.0	17.43	38.3	8.9	34.77	30.3	8.8	66.11	26.2
9.0	18.50	48.1	8.9	17.86	38.0	9.9	35.71	30.2	9.8	67.11	26.2
10.0	18.18	47.7	9.9	18.31	37.7	10.9	36.60	29.9	10.8	68.09	26.2
11.0	17.93	47.4	10.9	18.72	37.4	11.9	37.45	29.7	11.8	69.08	26.2
12.0	17.73	47.1	11.9	19.12	37.1	12.9	38.27	29.6	12.8	70.08	26.1
13.0	17.56	46.8	12.9	19.48	36.8	13.9	39.06	29.4	13.8	71.15	26.0
14.0	17.38	46.5	13.9	19.81	36.6	14.9	39.86	29.2	14.8	72.26	26.0
15.0	17.16	46.2	14.9	20.13	36.3	15.9	40.68	29.0	15.8	73.42	26.0
16.0	16.90	45.9	15.9	20.46	36.0	16.8	41.55	28.8	16.8	74.65	26.0
17.0	16.61	45.6	16.9	20.83	35.6	17.8	42.48	28.6	17.8	75.88	26.0
18.0	16.30	45.3	17.9	21.27	35.3	18.8	43.47	28.4	18.8	77.11	26.0
19.0	16.00	45.0	18.9	21.79	35.0	19.8	44.53	28.2	19.8	78.32	26.0
20.0	15.76	44.7	19.9	22.38	34.6	20.8	45.62	28.0	20.8	79.47	26.1
21.0	15.55	44.3	20.9	23.04	34.3	21.8	46.75	27.9	21.7	80.55	26.2
22.0	15.42	43.9	21.9	23.74	34.0	22.8	47.87	27.7	22.7	81.59	26.2
23.0	15.36	43.6	22.9	24.47	33.8	23.8	48.97	27.6	23.7	82.56	26.3
24.0	15.36	43.2	23.9	25.19	33.5	24.8	50.02	27.5	24.7	83.53	26.4
25.0	15.43	42.8	24.9	25.87	33.3	25.8	51.02	27.4	25.7	84.49	26.4
26.0	15.53	42.5	25.9	26.52	33.1	26.8	51.97	27.3	26.7	85.48	26.4
27.0	15.65	42.2	26.9	27.14	32.8	27.8	52.90	27.2	27.7	86.52	26.5
28.0	15.78	41.9	27.9	27.73	32.6	28.8	53.83	27.1	28.7	87.61	26.5
29.0	15.88	41.6	28.9	28.33	32.3	29.8	54.78	27.0	29.7	88.75	26.5
30.0	15.95	41.3	29.9	28.93	32.1	30.8	55.79	26.8	30.7	89.93	26.6
31.0	15.98	41.0	30.9	29.59	31.8	31.8	56.84	26.7	31.7	91.10	26.7
32.0	15.99	40.7	31.9	30.30	31.5	32.8	57.96	26.6	32.7	92.26	26.8

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 19 57	° ′ 88 54		h m 19 57	° ′ 88 54		h m 19 58	° ′ 88 54		h m 19 57	° ′ 88 54
	s	″		s	″		s	″		s	″
1.7	31.10	26.7	1.6	58.80	32.3	1.6	11.29	41.0	1.5	66.52	51.2
2.7	32.26	26.8	2.6	59.41	32.6	2.6	11.30	41.3	2.5	66.10	51.5
3.7	33.37	27.0	3.6	59.95	32.8	3.6	11.32	41.6	3.5	65.74	51.8
4.7	34.42	27.1	4.6	60.46	33.1	4.6	11.37	41.9	4.5	65.38	52.1
5.7	35.41	27.3	5.6	60.98	33.3	5.5	11.45	42.2	5.5	65.02	52.4
6.7	36.34	27.4	6.6	61.49	33.5	6.5	11.57	42.5	6.5	64.61	52.7
7.7	37.22	27.6	7.6	62.04	33.8	7.5	11.71	42.8	7.5	64.15	53.1
8.7	38.08	27.7	8.6	62.64	34.0	8.5	11.85	43.1	8.5	63.61	53.4
9.7	38.96	27.8	9.6	63.26	34.2	9.5	11.98	43.5	9.4	63.01	53.8
10.7	39.87	27.9	10.6	63.93	34.5	10.5	12.06	43.9	10.4	62.44	54.1
11.7	40.82	28.0	11.6	64.58	34.8	11.5	12.08	44.2	11.4	61.63	54.5
12.7	41.81	28.1	12.6	65.21	35.1	12.5	12.03	44.6	12.4	60.90	54.8
13.7	42.84	28.3	13.6	65.78	35.4	13.5	11.91	45.0	13.4	60.17	55.1
14.7	43.89	28.4	14.6	66.28	35.7	14.5	11.71	45.3	14.4	59.47	55.3
15.7	44.94	28.6	15.6	66.71	36.0	15.5	11.48	45.6	15.4	58.79	55.6
16.7	45.96	28.8	16.6	67.07	36.3	16.5	11.22	46.0	16.4	58.15	55.9
17.7	46.92	29.0	17.6	67.37	36.7	17.5	10.98	46.3	17.4	57.53	56.1
18.7	47.82	29.2	18.6	67.66	37.0	18.5	10.77	46.6	18.4	56.93	56.4
19.7	48.65	29.4	19.6	67.93	37.2	19.5	10.60	46.9	19.4	56.33	56.7
20.7	49.42	29.7	20.6	68.22	37.5	20.5	10.46	47.2	20.4	55.69	57.1
21.7	50.15	29.9	21.6	68.55	37.8	21.5	10.36	47.5	21.4	55.00	57.4
22.7	50.85	30.1	22.6	68.90	38.0	22.5	10.24	47.8	22.4	54.24	57.7
23.7	51.56	30.2	23.6	69.28	38.3	23.5	10.10	48.2	23.4	53.40	58.0
24.7	52.31	30.4	24.6	69.70	38.6	24.5	9.91	48.5	24.4	52.50	58.3
25.7	53.10	30.6	25.6	70.09	38.9	25.5	9.66	48.9	25.4	51.55	58.6
26.7	53.92	30.8	26.6	70.46	39.3	26.5	9.33	49.3	26.4	50.60	58.9
27.7	54.78	31.0	27.6	70.76	39.6	27.5	8.93	49.6	27.4	49.65	59.1
28.6	55.65	31.2	28.6	71.00	40.0	28.5	8.45	50.0	28.4	48.75	59.4
29.6	56.53	31.5	29.6	71.16	40.4	29.5	7.96	50.3	29.4	47.88	59.6
30.6	57.36	31.7	30.6	71.25	40.7	30.5	7.45	50.6	30.4	47.04	59.9
31.6	58.12	32.0	31.6	71.29	41.0	31.5	6.97	50.9	31.4	46.25	60.1
32.6	58.80	32.3	32.6	71.30	41.3	32.5	6.52	51.2	32.4	45.45	60.4

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	19h 57m	88° 55′		19h 56m	88° 55′		19h 55m	88° 55′		19h 55m	88° 54′
	s	″		s	″		s	″		s	″
1.4	45.45	0.4	1.3	72.85	6.6	1.2	92.40	8.9	1.1	55.42	66.1
2.4	44.64	0.6	2.3	71.62	6.8	2.2	91.06	8.9	2.1	54.27	65.9
3.4	43.80	0.9	3.3	70.32	7.0	3.2	89.64	8.9	3.1	53.20	65.7
4.4	42.88	1.2	4.3	68.98	7.2	4.2	88.26	8.8	4.1	52.20	65.5
5.4	41.89	1.5	5.3	67.61	7.3	5.2	86.94	8.7	5.1	51.29	65.2
6.4	40.84	1.8	6.3	66.22	7.4	6.2	85.67	8.6	6.1	50.38	65.0
7.4	39.72	2.0	7.3	64.84	7.5	7.2	84.46	8.6	7.1	49.48	64.9
8.4	38.59	2.3	8.3	63.52	7.6	8.2	83.30	8.5	8.1	48.56	64.7
9.4	37.45	2.5	9.3	62.24	7.7	9.2	82.14	8.5	9.1	47.61	64.5
10.4	36.33	2.7	10.3	61.01	7.7	10.2	80.98	8.4	10.1	46.61	64.3
11.4	35.26	2.9	11.3	59.83	7.8	11.2	79.77	8.4	11.1	45.57	64.2
12.4	34.23	3.1	12.3	58.66	7.9	12.2	78.52	8.4	12.1	44.50	64.0
13.4	33.23	3.3	13.3	57.50	8.0	13.2	77.22	8.3	13.1	43.45	63.7
14.3	32.27	3.5	14.3	56.30	8.1	14.2	75.87	8.3	14.1	42.42	63.5
15.3	31.30	3.7	15.3	55.05	8.2	15.2	74.50	8.2	15.1	41.45	63.2
16.3	30.33	3.9	16.3	53.73	8.3	16.2	73.13	8.1	16.1	40.55	62.9
17.3	29.31	4.2	17.3	52.36	8.4	17.2	71.79	8.0	17.1	39.72	62.6
18.3	28.22	4.4	18.3	50.94	8.5	18.2	70.50	7.8	18.1	38.97	62.4
19.3	27.06	4.6	19.3	49.50	8.6	19.2	69.27	7.7	19.1	38.25	62.1
20.3	25.84	4.9	20.3	48.07	8.6	20.2	68.11	7.6	20.1	37.56	61.9
21.3	24.57	5.1	21.2	46.66	8.7	21.2	67.01	7.4	21.1	36.87	61.6
22.3	23.29	5.2	22.2	45.30	8.7	22.2	65.94	7.3	22.1	36.17	61.4
23.3	22.02	5.4	23.2	44.01	8.7	23.2	64.89	7.2	23.1	35.44	61.1
24.3	−20.78	5.6	24.2	42.75	8.7	24.2	63.82	7.1	24.1	34.68	60.9
25.3	19.57	5.7	25.2	41.55	8.7	25.2	62.70	7.0	25.1	33.89	60.7
26.3	18.41	5.8	26.2	40.35	8.7	26.1	61.54	6.9	26.1	33.07	60.4
27.3	17.30	5.9	27.2	39.15	8.7	27.1	60.35	6.8	27.1	32.26	60.1
28.3	16.21	6.1	28.2	37.92	8.8	28.1	59.11	6.6	28.1	31.49	59.8
29.3	15.13	6.3	29.2	36.64	8.8	29.1	57.87	6.5	29.1	30.79	59.5
30.3	14.02	6.5	30.2	35.31	8.9	30.1	56.62	6.3	30.1	30.16	59.2
31.3	12.85	6.6	31.2	33.92	8.9	31.1	55.42	6.1	31.1	29.60	58.8
32.3	11.62	6.8	32.2	32.49	8.9	32.1	54.27	5.9	32.1	29.12	58.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	21 Cassiopeæ.		A Cassiopeæ.		50 Cassiopeæ.		ι Cassiopeæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 0 36	° ′ 74 15	h m 1 21	° ′ 69 34	h m 1 52	° ′ 71 46	h m 2 18	° ′ 66 47
	s	″	s	″	s	″	s	″
Jan. 0.3	57.17 −.71	53.4 +0.2	24.97 −.51	57.9 +0.7	11.17 −.53	44.4 +1.1	11.35 −.37	77.0 +1.2
10.2	56.45 .71	53.3 −0.4	24.45 .53	58.2 +0.1	10.62 .56	45.2 +0.5	10.95 .42	78.0 +0.7
20.2	55.74 .69	52.6 1.0	23.92 .54	58.0 −0.6	10.02 .61	45.5 0.0	10.51 .46	78.5 +0.2
30.2	55.06 .65	51.3 1.6	23.38 .52	57.2 1.1	9.40 .61	45.1 −0.6	10.04 .47	78.4 −0.3
Feb. 9.2	54.45 .57	49.4 2.1	22.87 .49	55.9 1.6	8.80 .59	44.2 1.2	9.56 .47	77.8 0.9
19.1	53.92 .46	47.1 2.5	22.40 .44	54.1 2.0	8.22 .55	42.8 1.7	9.10 .45	76.6 1.4
Mar. 1.1	53.50 .33	44.4 2.8	22.00 .36	51.8 2.4	7.71 .47	40.9 2.1	8.67 .40	75.0 1.8
11.1	53.21 .22	41.6 3.0	21.68 .27	49.3 2.6	7.28 .38	38.6 2.4	8.29 .34	73.0 2.2
21.1	53.06 −.08	38.5 3.0	21.47 .16	46.5 2.8	6.95 .27	36.0 2.7	7.99 .26	70.7 2.4
31.0	53.06 +.08	35.5 3.0	21.36 −.05	43.7 2.8	6.74 .15	33.2 2.8	7.78 .16	68.2 2.6
April 10.0	53.22 .23	32.6 2.8	21.38 +.08	40.9 2.8	6.66 −.01	30.4 2.8	7.67 −.06	65.6 2.6
20.0	53.53 .37	29.9 2.5	21.52 .19	38.2 2.6	6.72 +.12	27.6 2.7	7.66 +.06	63.0 2.6
29.9	53.97 .51	27.5 2.2	21.77 .31	35.7 2.3	6.91 .25	24.9 2.5	7.76 .15	60.4 2.4
May 9.9	54.54 .62	25.5 1.7	22.14 .41	33.6 2.0	7.23 .38	22.5 2.2	7.97 .26	58.1 2.2
19.9	55.22 .72	24.0 1.2	22.61 .51	31.8 1.6	7.67 .49	20.5 1.9	8.29 .36	56.0 1.9
29.9	55.99 .79	23.1 0.7	23.16 .58	30.5 1.1	8.21 .59	18.8 1.5	8.69 .44	54.3 1.5
June 8.8	56.81 .84	22.6 −0.2	23.77 .64	29.7 0.6	8.84 .67	17.5 1.0	9.18 .51	53.0 1.1
18.8	57.67 .87	22.7 +0.4	24.44 .68	29.3 −0.1	9.55 .73	16.8 −0.5	9.72 .57	52.1 0.7
28.8	58.54 .87	23.4 0.9	25.14 .71	29.5 +0.4	10.30 .77	16.5 0.0	10.32 .61	51.7 −0.2
July 8.7	59.41 .85	24.6 1.4	25.85 .71	30.2 0.9	11.08 .79	16.8 +0.5	10.95 .64	51.7 +0.3
18.7	60.24 .81	26.3 1.9	26.56 .70	31.4 1.4	11.88 .79	17.5 1.0	11.60 .65	52.2 0.7
28.7	61.02 .75	28.4 2.3	27.24 .67	33.1 1.9	12.66 .77	18.7 1.4	12.25 .64	53.2 1.2
Aug. 7.7	61.73 .67	30.9 2.7	27.89 .62	35.1 2.3	13.41 .74	20.4 1.9	12.89 .63	54.5 1.6
17.6	62.36 .58	33.8 3.0	28.49 .57	37.6 2.6	14.13 .69	22.4 2.2	13.50 .60	56.3 1.9
27.6	62.90 .48	37.0 3.3	29.03 .50	40.3 2.9	14.79 .63	24.9 2.6	14.08 .56	58.4 2.3
Sept. 6.6	63.33 .38	40.4 3.5	29.49 .43	43.4 3.1	15.38 .56	27.6 2.9	14.61 .51	60.8 2.5
16.6	63.65 .27	43.9 3.6	29.88 .35	46.6 3.3	15.90 .48	30.6 3.1	15.09 .45	63.5 2.8
26.5	63.85 .15	47.5 3.6	30.19 .26	49.9 3.4	16.33 .39	33.8 3.3	15.50 .38	66.4 3.0
Oct. 6.5	63.94 +.03	51.1 3.6	30.41 .18	53.3 3.4	16.68 .29	37.1 3.4	15.85 .31	69.4 3.1
16.5	63.91 −.08	54.7 3.5	30.53 +.09	56.7 3.4	16.92 .20	40.5 3.4	16.12 .24	72.5 3.1
26.5	63.77 .20	58.1 3.3	30.57 −.01	60.1 3.3	17.06 +.09	43.8 3.3	16.32 .16	75.7 3.1
Nov. 5.4	63.51 .31	61.2 3.0	30.52 .10	63.2 3.1	17.10 −.01	47.1 3.2	16.43 +.07	78.8 3.1
15.4	63.15 .41	64.1 2.6	30.38 .18	66.2 2.8	17.03 .12	50.3 3.0	16.46 −.01	81.8 2.9
25.4	62.68 .51	66.5 2.2	30.15 .27	68.8 2.4	16.87 .22	53.2 2.7	16.41 .09	84.6 2.7
Dec. 5.3	62.13 .59	68.5 1.7	29.84 .34	71.1 2.0	16.59 .32	55.7 2.4	16.27 .18	87.2 2.4
15.3	61.51 .66	69.9 1.2	29.46 .42	72.9 1.6	16.22 .41	57.9 1.9	16.05 .26	89.3 2.0
25.3	60.83 .70	70.8 +0.6	29.01 .47	74.1 1.0	15.77 .49	59.6 1.5	15.76 .33	91.1 1.6
35.3	60.12 −.72	71.0 0.0	28.51 −.51	74.9 +0.4	15.24 −.55	60.8 +0.9	15.39 −.39	92.5 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	48 Cephei. Right Ascension.	48 Cephei. Declination *North.*	α Camelopardalis. Right Ascension.	α Camelopardalis. Declination *North.*	Groombridge 966. Right Ascension.	Groombridge 966. Declination *North.*	22 Camelopardalis (H). Right Ascension.	22 Camelopardalis (H). Declination *North.*
	h m 3 3	° ′ 77 14	h m 4 40	° ′ 66 6	h m 5 21	° ′ 74 56	h m 6 4	° ′ 69 21
	s	″	s	″	s	″	s	″
Jan. 0.4	38.87 −.50	35.8 +2.0	54.11 −.09	42.4 +2.4	63.03 −.05	51.8 +2.9	14.73 +.10	32.2 +2.7
10.4	38.20 .72	37.6 1.6	53.96 .19	44.6 2.2	62.90 .21	54.5 2.6	14.76 −.02	34.8 2.6
20.4	37.42 .82	39.0 1.0	53.73 .28	46.5 1.7	62.62 .36	57.0 2.4	14.68 .14	37.3 2.4
30.3	36.56 .88	39.6 +0.4	53.40 .36	48.1 1.3	62.18 .50	59.3 2.0	14.48 .26	39.6 2.2
Feb. 9.3	35.65 .91	39.8 −0.2	53.01 .42	49.2 0.9	61.61 .62	61.0 1.6	14.16 .37	41.7 1.9
19.3	34.73 .90	39.3 0.8	52.56 .46	49.9 +0.4	60.94 .70	62.4 1.1	13.74 .45	43.3 1.5
Mar. 1.3	33.85 .85	38.3 1.3	52.08 .48	50.1 −0.1	60.20 .75	63.2 +0.5	13.25 .52	44.6 1.0
11.2	33.04 .76	36.7 1.8	51.60 .48	49.7 0.5	59.43 .78	63.5 0.0	12.71 .55	45.3 +0.5
21.2	32.33 .64	34.7 2.2	51.13 .45	49.0 1.0	58.65 .76	63.2 −0.6	12.15 .56	45.6 0.0
31.2	31.76 .49	32.3 2.5	50.70 .40	47.7 1.4	57.90 .71	62.3 1.1	11.59 .55	45.4 −0.5
April 10.1	31.35 .32	29.7 2.7	50.33 .34	46.1 1.7	57.22 .63	61.1 1.5	11.06 .50	44.7 0.9
20.1	31.12 −.14	26.9 2.8	50.03 .25	44.2 2.0	56.64 .53	60.4 1.9	10.59 .44	43.5 1.3
30.1	31.07 +.05	24.0 2.8	49.83 .16	42.1 2.2	56.17 .40	57.3 2.2	10.18 .36	42.0 1.7
May 10.1	31.22 .25	21.3 2.7	49.72 −.06	39.8 2.3	55.85 .25	55.0 2.4	9.87 .26	40.1 2.0
20.0	31.55 .42	18.6 2.5	49.72 +.05	37.5 2.3	55.67 −.10	52.4 2.6	9.66 .16	37.9 2.2
30.0	32.06 .58	16.2 2.3	49.82 .15	35.2 2.3	55.66 +.05	49.8 2.6	9.56 −.05	35.6 2.4
June 9.0	32.71 .73	14.1 1.9	50.03 .26	33.0 2.1	55.78 .21	47.1 2.6	9.57 +.06	33.2 2.4
19.0	33.51 .86	12.4 1.5	50.33 .34	30.9 1.9	56.06 .35	44.6 2.5	9.69 .18	30.7 2.4
28.9	34.42 .96	11.1 1.1	50.71 .42	29.1 1.7	56.49 .49	42.1 2.3	9.92 .28	28.3 2.4
July 8.9	35.43 1.03	10.2 0.6	51.17 .49	27.5 1.4	57.04 .61	39.9 2.1	10.26 .38	26.0 2.2
18.9	36.49 1.08	9.8 −0.1	51.69 .55	26.3 1.1	57.71 .72	37.9 1.8	10.68 .47	23.9 2.0
28.8	37.60 1.11	9.9 +0.3	52.27 .59	25.4 0.7	58.48 .81	36.2 1.5	11.19 .54	21.9 1.8
Aug. 7.8	38.72 1.12	10.5 0.8	52.88 .63	24.8 −0.4	59.34 .89	34.8 1.2	11.77 .61	20.2 1.6
17.8	39.83 1.10	11.5 1.2	53.52 .65	24.6 0.0	60.25 .94	33.9 0.8	12.40 .66	18.8 1.3
27.8	40.91 1.06	13.0 1.7	54.17 .66	24.7 +0.3	61.22 .98	33.3 −0.4	13.09 .71	17.7 1.0
Sept. 6.7	41.95 1.00	14.8 2.0	54.83 .66	25.2 0.7	62.22 1.00	33.0 0.0	13.81 .74	16.9 0.6
16.7	42.91 .92	17.1 2.4	55.48 .64	26.0 1.0	63.23 1.01	33.2 +0.4	14.56 .75	16.4 −0.3
26.7	43.79 .82	19.6 2.7	56.12 .62	27.2 1.3	64.24 1.00	33.8 0.8	15.32 .76	16.4 +0.1
Oct. 6.7	44.56 .71	22.5 2.9	56.72 .59	28.7 1.6	65.22 .96	34.8 1.2	16.08 .75	16.7 0.5
16.6	45.21 .59	25.5 3.1	57.29 .54	30.5 1.9	66.17 .91	36.2 1.5	16.83 .74	17.3 0.8
26.6	45.73 .44	28.9 3.3	57.81 .49	32.5 2.1	67.05 .85	37.9 1.9	17.56 .70	18.3 1.2
Nov. 5.6	46.11 .29	32.1 3.3	58.27 .43	34.7 2.3	67.86 .76	40.0 2.2	18.24 .66	19.7 1.5
15.6	46.33 +.14	35.4 3.3	58.66 .35	37.2 2.5	68.57 .65	42.3 2.5	18.87 .59	21.4 1.9
25.5	46.39 −.03	38.7 3.2	58.97 .27	39.7 2.6	69.16 .53	44.9 2.7	19.42 .51	23.4 2.1
Dec. 5.5	46.28 .19	41.8 3.0	59.19 .17	42.4 2.6	69.61 .38	47.7 2.9	19.88 .42	25.7 2.4
15.5	46.00 .36	44.7 2.7	59.32 +.07	45.0 2.6	69.91 .23	50.6 2.9	20.25 .31	28.2 2.5
25.4	45.56 .51	47.2 2.3	59.34 −.02	47.6 2.5	70.07 +.07	53.6 2.9	20.49 .19	30.8 2.6
35.4	44.98 −.65	49.4 +1.9	59.26 −.11	50.0 +2.3	70.04 −.10	56.5 +2.8	20.62 +.06	33.4 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	51 Cephei (H.)				Piazzi vii. 67.				3 Ursæ Majoris (H.)				σ^2 Ursæ Majoris.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m 6 36		° ′ 87 14		h m 7 16		° ′ 68 43		h m 7 59		° ′ 68 51		h m 8 58		° ′ 67 39	
	s		″		s		″		s		″		s		″	
Jan. 0.5	97.21	+.87	22.9	+3.2	64.01	+.29	42.5	+2.4	35.06	+.40	24.3	+2.2	40.80	+.49	56.8	+1.6
10.5	97.62	−.07	26.2	3.2	64.25	.17	45.0	2.5	35.41	.26	26.6	2.4	41.25	.40	58.6	2.0
20.5	97.08	.97	29.4	3.1	64.36	+.06	47.6	2.6	35.63	.16	29.1	2.6	41.61	.30	60.8	2.3
30.5	95.68	1.82	32.4	2.9	64.34	−.08	50.2	2.5	35.72	+.03	31.8	2.6	41.84	.16	63.2	2.5
Feb. 9.4	93.44	2.59	35.2	2.6	64.19	.20	52.7	2.4	35.68	−.10	34.4	2.6	41.96	+.06	65.9	2.6
19.4	90.49	3.27	37.5	2.1	63.93	.31	55.0	2.2	35.52	.22	37.0	2.4	41.95	−.06	68.5	2.7
Mar. 1.4	86.91	3.80	39.4	1.6	63.57	.40	57.0	1.8	35.24	.32	39.3	2.2	41.82	.18	71.2	2.6
11.3	82.90	4.15	40.8	1.1	63.13	.47	58.6	1.4	34.87	.41	41.3	1.9	41.59	.28	73.6	2.3
21.3	78.62	4.34	41.6	+0.5	62.63	.51	59.7	1.0	34.42	.47	43.0	1.4	41.26	.36	75.8	2.0
31.3	74.22	4.34	41.8	−0.1	62.10	.53	60.4	+0.5	33.92	.51	44.2	1.0	40.86	.42	77.7	1.7
April 10.3	69.94	4.17	41.3	0.7	61.57	.53	60.6	0.0	33.40	.53	44.9	+0.5	40.42	.46	79.1	1.2
20.2	65.88	3.67	40.3	1.3	61.05	.50	60.4	−0.5	32.87	.52	45.2	0.0	39.94	.48	80.2	0.8
30.2	62.21	3.43	38.8	1.8	60.57	.45	59.6	0.9	32.37	.49	45.0	−0.5	39.46	.48	80.7	+0.3
May 10.2	59.03	2.85	36.8	2.2	60.16	.38	58.4	1.4	31.90	.44	44.3	0.9	38.99	.46	80.7	−0.2
20.2	56.51	2.16	34.4	2.6	59.81	.30	56.9	1.7	31.49	.37	43.1	1.3	38.55	.42	80.2	0.7
30.1	54.71	1.44	31.7	2.8	59.56	.21	55.0	2.0	31.16	.29	41.6	1.7	38.16	.36	79.3	1.1
June 9.1	53.64	−.69	28.8	3.0	59.40	.11	52.8	2.2	30.91	.21	39.7	2.0	37.83	.30	78.0	1.6
19.1	53.33	+.10	25.8	3.1	59.34	−.01	50.5	2.4	30.75	.11	37.5	2.3	37.56	.23	76.2	1.9
29.0	53.83	.87	22.7	3.1	59.39	+.09	48.0	2.5	30.69	−.01	35.1	2.5	37.38	.16	74.2	2.2
July 9.0	55.07	1.62	19.6	3.0	59.53	.19	45.5	2.5	30.72	+.06	32.6	2.6	37.27	−.07	71.8	2.4
19.0	57.07	2.34	16.7	2.8	59.77	.28	43.0	2.5	30.85	.17	30.0	2.7	37.25	+.02	69.3	2.6
29.0	59.75	3.01	13.9	2.6	60.10	.37	40.5	2.4	31.07	.26	27.3	2.7	37.31	.10	66.6	2.8
Aug. 7.9	63.08	3.58	11.4	2.4	60.51	.45	38.2	2.3	31.38	.35	24.6	2.6	37.46	.18	63.7	2.9
17.9	66.92	4.09	9.2	2.1	61.00	.52	35.9	2.1	31.77	.43	22.1	2.5	37.68	.26	60.9	2.9
27.9	71.26	4.64	7.3	1.7	61.55	.58	33.9	1.9	32.24	.50	19.6	2.4	37.98	.34	58.0	2.8
Sept. 6.9	75.99	4.88	5.8	1.3	62.16	.64	32.1	1.6	32.77	.56	17.3	2.2	38.36	.41	55.2	2.7
16.8	81.02	5.12	4.7	0.9	62.83	.68	30.6	1.3	33.36	.62	15.3	1.9	38.81	.48	52.5	2.6
26.8	86.23	5.27	4.0	−0.4	63.53	.72	29.4	1.0	34.02	.68	13.5	1.6	39.33	.54	50.0	2.4
Oct. 6.8	91.56	5.31	3.8	+0.1	64.26	.74	28.6	0.7	34.69	.71	12.0	1.2	39.90	.60	47.8	2.1
16.7	96.84	5.24	4.2	0.6	65.00	.75	28.1	−0.3	35.44	.74	10.9	0.9	40.53	.65	45.8	1.6
26.7	102.03	5.09	4.9	1.0	65.75	.75	28.0	+0.1	36.19	.75	10.2	0.5	41.20	.69	44.2	1.4
Nov. 5.7	106.93	4.72	6.2	1.6	66.49	.73	28.3	0.5	36.95	.75	9.8	−0.1	41.90	.71	43.0	1.0
15.7	111.48	4.29	8.0	2.0	67.21	.69	29.1	0.9	37.70	.74	9.9	+0.3	42.62	.72	42.2	−0.6
25.6	115.51	3.72	10.1	2.4	67.87	.64	30.2	1.3	38.42	.70	10.5	0.8	43.34	.71	41.8	0.0
Dec. 5.6	118.92	3.06	12.7	2.7	68.48	.56	31.7	1.7	39.09	.64	11.5	1.2	44.04	.68	42.1	+0.5
15.6	121.62	2.28	15.6	3.0	69.00	.48	33.6	2.0	39.70	.57	12.9	1.6	44.70	.63	42.6	0.8
25.6	123.49	1.48	18.6	3.2	69.43	.37	35.8	2.3	40.23	.48	14.7	2.0	45.30	.57	43.8	1.3
35.5	124.48	+.54	21.9	+3.2	69.75	+.26	38.2	+2.5	40.65	+.38	16.9	+2.3	45.83	+.48	45.4	+1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Draconis (H.)		24 Ursæ Majoris. (*d*).		32 Ursæ Majoris.		9 Draconis (H).	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 17	° ′ 81 53	h m 9 22	° ′ 70 24	h m 10 8	° ′ 65 45	h m 10 23	° ′ 76 23
	s	″	s	″	s	″	s	″
Jan. 0.6	56.67 +1.31	76.6 +2.0	41.68 +.61	24.2 +1.4	21.19 +.56	52.3 +0.8	43.23 +.97	26.1 +0.9
10.6	57.85 1.06	78.8 2.4	42.24 .50	25.9 1.9	21.73 .50	53.4 1.3	44.15 .85	27.4 1.5
20.6	58.78 .78	81.4 2.7	42.69 .39	28.0 2.3	22.20 .42	54.9 1.8	44.93 .72	29.2 2.0
30.5	59.42 .48	84.2 2.9	43.01 .26	30.5 2.6	22.57 .33	56.9 2.2	45.58 .56	31.4 2.4
Feb. 9.5	59.74 +.16	87.3 3.1	43.20 +.12	33.2 2.7	22.83 .21	59.2 2.4	46.05 .38	34.0 2.7
19.5	59.74 −.15	90.4 3.1	43.25 −.02	36.0 2.8	22.99 +.10	61.8 2.6	46.34 .20	36.9 2.9
Mar. 1.5	59.44 .45	93.4 3.0	43.16 .15	38.7 2.7	23.03 −.01	64.5 2.7	46.44 +.01	39.9 3.0
11.4	58.85 .72	96.3 2.7	42.95 .26	41.4 2.6	22.97 .11	67.3 2.7	46.36 −.17	42.9 3.0
21.4	58.00 .96	98.9 2.4	42.64 .36	43.9 2.3	22.81 .21	69.8 2.5	46.10 .34	45.8 2.8
31.4	56.94 1.14	101.1 2.0	42.22 .45	46.0 1.9	22.56 .29	72.3 2.3	45.69 .48	48.5 2.5
April 10.4	55.71 1.28	102.8 1.4	41.74 .50	47.7 1.5	22.24 .34	74.4 2.0	45.14 .60	50.9 2.2
20.3	54.37 1.35	103.9 0.9	41.22 .53	49.0 1.1	21.87 .39	76.2 1.6	44.49 .69	52.9 1.8
30.3	52.98 1.39	104.6 +0.4	40.68 .55	49.9 +0.6	21.47 .41	77.6 1.2	43.76 .75	54.4 1.3
May 10.3	51.59 1.37	104.6 −0.2	40.13 .54	50.1 0.0	21.04 .42	78.5 0.7	42.98 .78	55.4 0.7
20.2	50.24 1.30	104.1 0.8	39.61 .50	49.9 −0.6	20.62 .41	78.9 +0.2	42.19 .78	55.9 +0.2
30.2	48.99 1.18	103.1 1.3	39.12 .45	49.2 1.0	20.22 .39	78.8 −0.3	41.42 .76	55.8 −0.4
June 9.2	47.88 1.04	101.5 1.8	38.70 .39	48.0 1.4	19.84 .36	78.3 0.8	40.67 .70	55.1 0.9
19.2	46.92 .86	99.5 2.2	38.34 .32	46.4 1.8	19.50 .31	77.2 1.2	39.99 .64	54.0 1.4
29.1	46.16 .66	97.1 2.6	38.06 .24	44.4 2.1	19.22 .26	75.8 1.7	39.39 .56	52.3 1.9
July 9.1	45.60 .44	94.4 2.9	37.87 .15	42.1 2.4	18.99 .20	73.9 2.0	38.67 .46	50.3 2.3
19.1	45.28 −.21	91.4 3.1	37.77 −.06	39.5 2.7	18.82 .13	71.7 2.3	38.47 .35	47.8 2.6
29.1	45.18 +.04	88.2 3.2	37.76 +.04	36.7 2.9	18.72 −.07	69.3 2.6	38.17 .23	45.0 2.9
Aug. 8.0	45.31 .25	84.9 3.3	37.84 .13	33.7 3.0	18.69 .00	66.5 2.8	38.01 −.11	42.0 3.1
18.0	45.63 .48	81.6 3.3	38.02 .22	30.7 3.1	18.73 +.07	63.6 3.0	37.96 +.02	38.7 3.3
28.0	46.27 .70	78.3 3.3	38.28 .31	27.6 3.1	18.84 .14	60.5 3.1	38.05 .15	35.4 3.4
Sept. 6.9	47.08 .91	75.0 3.2	38.63 .39	24.6 2.9	19.02 .22	57.4 3.1	38.27 .29	31.9 3.5
16.9	48.10 1.11	71.9 3.0	39.07 .48	21.7 2.8	19.28 .29	54.3 3.1	38.62 .42	28.4 3.4
26.9	49.31 1.29	69.0 2.7	39.59 .56	18.9 2.7	19.61 .37	51.2 3.0	39.10 .54	25.1 3.3
Oct. 6.9	50.63 1.46	66.5 2.4	40.19 .63	16.3 2.4	20.01 .43	48.2 2.9	39.71 .66	21.9 3.1
16.8	52.21 1.60	64.2 2.0	40.85 .69	14.0 2.1	20.48 .50	45.5 2.6	40.43 .78	18.8 2.9
26.8	53.86 1.70	62.4 1.6	41.57 .74	12.1 1.8	21.01 .56	42.9 2.4	41.27 .88	16.1 2.5
Nov. 5.8	55.60 1.77	61.0 1.1	42.33 .78	10.5 1.3	21.59 .61	40.7 2.0	42.20 .97	13.8 2.1
15.8	57.39 1.80	60.2 −0.6	43.13 .80	9.4 0.9	22.22 .64	38.9 1.6	43.20 1.03	11.9 1.7
25.7	59.19 1.78	59.9 0.0	43.93 .80	8.8 −0.4	22.88 .66	37.5 1.1	44.26 1.07	10.5 1.1
Dec. 5.7	60.95 1.72	60.2 +0.6	44.72 .78	8.7 +0.1	23.55 .66	36.6 0.6	45.35 1.09	9.6 −0.6
15.7	62.63 1.60	61.0 1.1	45.49 .74	9.1 0.7	24.21 .65	36.3 −0.1	46.44 1.07	9.3 0.0
25.6	64.16 1.44	62.4 1.6	46.19 .68	10.1 1.2	24.84 .61	36.5 +0.4	47.49 1.02	9.6 +0.6
35.6	65.50 +1.25	64.3 +2.1	46.82 +.60	11.5 +1.7	25.43 +.56	37.2 +1.0	48.48 +.94	10.6 +1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		λ Draconis.		4 Draconis (H.)		κ Draconis.		32 Camelop. (foll.)	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 11 23	° ′ 70 3	h m 12 5	° ′ 78 20	h m 12 27	° ′ 70 30	h m 12 47	° ′ 84 7
		s	″	s	″	s	″	s	″
Jan.	0.7	27.91 +.74	31.8 −0.1	53.88 +1.21	58.5 −0.5	45.83 +.76	58.5 −0.9	64.20 +2.16	49.8 −0.6
	10.7	28.64 .69	32.1 +0.6	55.07 1.17	58.4 +0.2	46.59 .75	57.9 −0.2	66.44 2.26	49.3 −0.2
	20.7	29.30 .63	33.0 1.2	56.21 1.09	59.0 0.9	47.33 .71	58.0 +0.4	68.69 2.19	49.5 +0.5
	30.6	29.89 .54	34.5 1.7	57.25 .96	60.2 1.5	48.02 .65	58.7 1.0	70.62 2.04	50.3 1.1
Feb.	9.6	30.38 .43	36.4 2.2	58.17 .83	62.0 2.0	48.64 .57	60.1 1.6	72.77 1.92	51.7 1.7
	19.6	30.75 .31	38.8 2.5	58.92 .66	64.3 2.5	49.16 .47	61.9 2.1	74.47 1.66	53.7 2.2
Mar.	1.6	30.99 .19	41.5 2.8	59.49 .47	66.9 2.8	49.58 .36	64.3 2.5	75.86 1.21	56.2 2.6
	11.5	31.12 +.06	44.4 2.9	59.85 .27	69.9 3.0	49.88 .24	67.0 2.8	76.89 .84	59.0 2.9
	21.5	31.11 −.07	47.4 2.9	60.01 +.06	73.0 3.1	50.05 +.11	69.9 3.0	77.54 .45	62.0 3.1
	31.5	30.99 .17	50.3 2.8	59.97 −.14	76.2 3.1	50.10 −.01	72.9 3.1	77.79 +.06	65.2 3.2
April	10.4	30.76 .27	53.1 2.6	59.73 .33	79.2 3.0	50.04 .12	76.0 3.0	77.63 −.34	68.4 3.1
	20.4	30.44 .36	55.6 2.3	59.31 .50	82.1 2.7	49.86 .23	78.9 2.8	77.10 .71	71.4 2.9
	30.4	30.05 .42	57.8 2.0	58.74 .64	84.6 2.4	49.59 .32	81.6 2.6	76.22 1.04	74.3 2.7
May	10.4	29.60 .47	59.5 1.5	58.03 .76	66.8 1.9	49.24 .39	84.0 2.2	75.62 1.33	76.8 2.3
	20.3	29.11 .50	60.8 1.0	57.23 .84	88.5 1.4	48.82 .45	86.0 1.8	73.56 1.56	78.8 1.8
	30.3	28.61 .51	61.6 +0.5	56.36 .90	89.7 0.9	48.34 .49	87.6 1.3	71.91 1.75	80.4 1.4
June	9.3	28.09 .50	61.8 0.0	55.44 .93	90.3 +0.4	47.84 .52	88.6 0.8	70.07 1.88	81.5 0.8
	19.3	27.60 .49	61.5 −0.5	54.50 .93	90.4 −0.2	47.31 .53	89.2 +0.3	68.14 1.96	82.1 +0.3
	29.2	27.12 .45	60.7 1.0	53.58 .90	90.0 0.7	46.78 .53	89.2 −0.3	66.17 1.97	82.1 −0.3
July	9.2	26.69 .41	59.5 1.5	52.70 .86	89.0 1.3	46.26 .51	88.6 0.8	64.21 1.94	81.5 0.8
	19.2	26.31 .35	57.8 2.0	51.86 .79	87.4 1.8	45.76 .48	87.6 1.3	62.30 1.86	80.4 1.4
	29.1	25.98 .29	55.6 2.4	51.11 .71	85.5 2.2	45.30 .44	86.1 1.8	60.48 1.74	78.7 1.9
Aug.	8.1	25.72 .22	53.0 2.7	50.45 .61	83.0 2.6	44.88 .39	84.0 2.2	58.61 1.56	76.6 2.3
	18.1	25.54 .15	50.2 3.0	49.90 .49	80.2 3.0	44.51 .33	81.6 2.6	57.32 1.39	74.1 2.7
	28.1	25.43 −.06	47.0 3.2	49.47 .36	77.1 3.3	44.21 .26	78.8 2.9	56.03 1.16	71.2 3.0
Sept.	7.0	25.41 +.02	43.7 3.4	49.18 .22	73.7 3.5	43.99 .18	75.7 3.2	54.99 .91	67.9 3.3
	17.0	25.48 .11	40.2 3.5	49.04 −.07	70.1 3.7	43.85 −.09	72.3 3.5	54.22 .62	64.4 3.6
	27.0	25.64 .21	36.7 3.5	49.05 +.09	66.4 3.7	43.81 .00	68.8 3.6	53.74 −.32	60.7 3.7
Oct.	7.0	25.90 .30	33.2 3.5	49.22 .26	62.6 3.7	43.86 +.10	65.1 3.7	53.58 .00	56.9 3.6
	16.9	26.25 .40	29.7 3.4	49.56 .42	58.9 3.7	44.01 .20	61.4 3.7	53.74 +.33	53.1 3.8
	26.9	26.70 .49	26.4 3.2	49.06 .59	55.3 3.5	44.28 .31	57.7 3.6	54.24 .67	49.3 3.7
Nov.	5.9	27.23 .57	23.4 2.9	50.74 .74	51.9 3.2	44.64 .42	54.1 3.4	55.07 1.00	45.7 3.5
	15.8	27.84 .65	20.6 2.5	51.55 .88	48.8 2.9	45.11 .51	50.8 3.2	56.23 1.31	42.3 3.2
	25.8	28.52 .70	18.3 2.1	52.50 1.01	46.1 2.5	45.68 .60	47.8 2.8	57.70 1.60	39.2 2.8
Dec.	5.8	29.26 .75	16.5 1.6	53.57 1.11	43.8 2.0	46.32 .68	45.2 2.4	59.44 1.88	36.6 2.4
	15.8	30.02 .77	15.2 1.0	54.72 1.16	42.1 1.4	47.03 .73	43.0 1.9	61.41 2.06	34.5 1.8
	25.7	30.80 .76	14.5 −0.4	55.92 1.21	41.0 0.8	47.78 .76	41.4 1.3	63.55 2.19	32.9 1.2
	35.7	31.54 +.72	14.4 +0.2	57.13 +1.20	40.6 −0.2	48.55 +.76	40.5 −0.7	65.79 +2.26	32.0 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		α Draconis.				5 Ursæ Minoris.				β Ursæ Minoris.				γ² Ursæ Minoris.			
		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
		14h 0m		65° 0′		14h 27m		76° 16′		14h 51m		74° 41′		15h 20m		72° 18′	
		s.		″		s		″		s		″		s		″	
Jan.	0.8	45.06	+.55	29.6	−2.2	45.72	+.84	60.8	−2.3	2.84	+.73	45.2	−2.6	53.46	+.57	18.9	−2.9
	10.8	45.63	.59	27.7	1.6	46.62	.93	58.8	1.7	3.61	.81	42.9	2.0	54.09	.66	16.2	2.4
	20.8	46.24	.60	26.4	0.9	47.59	.98	57.4	1.1	4.46	.87	41.1	1.4	54.79	.73	14.1	1.8
	30.7	46.84	.59	25.8	−0.3	48.59	1.00	56.6	−0.4	5.35	.89	40.0	0.8	55.55	.77	12.6	1.2
Feb.	9.7	47.42	.56	25.9	+0.4	49.58	.97	56.6	+0.3	6.25	.89	39.6	−0.1	56.33	.78	11.8	−0.5
	19.7	47.96	.52	26.6	1.0	50.53	.91	57.2	0.9	7.13	.85	39.9	+0.6	57.11	.77	11.6	+0.2
Mar.	1.7	48.45	.46	27.9	1.6	51.41	.83	58.4	1.5	7.95	.79	40.8	1.2	57.87	.73	12.1	0.8
	11.6	48.87	.38	29.7	2.1	52.18	.71	60.3	2.0	8.70	.70	42.4	1.8	58.57	.66	13.2	1.4
	21.6	49.21	.30	32.1	2.5	52.83	.57	62.5	2.5	9.35	.59	44.4	2.3	59.19	.58	15.0	2.0
	31.6	49.46	.21	34.8	2.9	53.33	.43	65.3	2.8	9.87	.45	47.0	2.7	59.73	.48	17.2	2.5
April	10.6	49.62	.12	37.8	3.0	53.68	.27	68.3	3.1	10.26	.32	49.8	3.0	60.15	.37	19.9	2.8
	20.5	49.70	+.03	40.8	3.1	53.86	+.10	71.4	3.2	10.52	.18	53.0	3.2	60.47	.25	22.9	3.0
	30.5	49.68	−.05	44.0	3.1	53.89	−.06	74.6	3.2	10.62	+.03	56.2	3.2	60.66	.13	26.0	3.2
May	10.5	49.59	.13	47.0	2.9	53.75	.21	77.8	3.1	10.59	−.10	59.4	3.1	60.72	+.01	29.3	3.2
	20.4	49.43	.20	49.8	2.7	53.47	.35	80.7	2.8	10.41	.24	62.4	3.0	60.67	−.11	32.5	3.1
	30.4	49.18	.26	52.3	2.3	53.05	.46	83.4	2.5	10.11	.36	65.3	2.7	60.50	.22	35.5	2.9
June	9.4	48.89	.32	54.4	1.9	52.51	.60	85.8	2.2	9.70	.47	67.9	2.4	60.23	.33	38.3	2.7
	19.4	48.55	.36	56.2	1.5	51.87	.68	87.7	1.7	9.18	.56	70.1	2.0	59.85	.42	40.9	2.4
	29.3	48.17	.39	57.4	1.0	51.14	.76	89.2	1.2	8.57	.64	71.9	1.5	59.38	.50	43.0	1.9
July	9.3	47.76	.42	58.2	+0.5	50.35	.82	90.1	0.7	7.89	.71	73.1	1.0	58.84	.57	44.7	1.5
	19.3	47.33	.43	58.5	0.0	49.51	.86	90.6	+0.2	7.16	.75	73.9	+0.5	58.24	.63	46.0	1.0
	29.3	46.89	.43	58.2	−0.5	48.65	.87	90.5	−0.4	6.38	.78	74.2	0.0	57.59	.67	46.7	+0.5
Aug.	8.2	46.46	.43	57.4	1.0	47.78	.86	89.8	0.9	5.59	.79	73.9	−0.5	56.90	.69	46.9	−0.1
	18.2	46.04	.41	56.1	1.5	46.93	.84	88.7	1.4	4.80	.78	73.1	1.1	56.20	.70	46.5	0.6
	28.2	45.64	.38	54.4	2.0	46.11	.79	87.0	1.8	4.03	.75	71.8	1.6	55.50	.69	45.7	1.1
Sept.	7.1	45.28	.34	52.2	2.4	45.34	.73	84.9	2.3	3.29	.71	70.0	2.0	54.82	.66	44.3	1.6
	17.1	44.97	.28	49.5	2.8	44.66	.64	82.3	2.7	2.61	.64	67.7	2.5	54.17	.62	42.4	2.1
	27.1	44.72	.22	46.5	3.1	44.06	.54	79.4	3.1	2.01	.56	65.0	2.9	53.58	.55	40.1	2.5
Oct.	7.1	44.53	.16	43.2	3.4	43.58	.42	76.1	3.4	1.50	.45	62.0	3.2	53.06	.47	37.4	2.9
	17.0	44.43	−.06	39.7	3.6	43.23	.28	72.6	3.6	1.10	.33	58.6	3.5	52.63	.36	34.3	3.2
	27.0	44.41	+.03	36.0	3.7	43.02	−.13	68.8	3.8	0.83	.20	55.0	3.7	52.31	.26	30.9	3.5
Nov.	6.0	44.49	.12	32.2	3.8	42.97	+.03	65.0	3.8	0.70	−.06	51.2	3.8	52.11	.14	27.3	3.7
	16.0	44.66	.21	28.4	3.7	43.09	.20	61.2	3.8	0.72	+.10	47.4	3.8	52.03	−.01	23.5	3.8
	25.9	44.93	.31	24.7	3.6	43.37	.37	57.4	3.7	0.90	.25	43.6	3.7	52.09	+.12	19.7	3.8
Dec.	5.9	45.28	.40	21.2	3.3	43.82	.52	53.9	3.4	1.22	.40	39.9	3.6	52.29	.27	15.9	3.7
	15.9	45.73	.47	18.1	3.0	44.42	.67	50.6	3.1	1.69	.54	36.4	3.3	52.62	.39	12.3	3.5
	25.8	46.23	.53	15.3	2.5	45.16	.79	47.7	2.7	2.30	.66	33.3	2.9	53.08	.51	8.9	3.2
	35.8	46.79	+.56	13.1	−2.0	46.01	+.89	45.3	−2.2	3.02	+.76	30.7	−2.4	53.65	+.60	6.0	−2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris				Groombridge 2320.				15 Draconis (A.)				ω Draconis.			
	Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.		Right Ascension.		Declination North.	
	$15^{h}\ 48^{m}$		$78^{\circ}\ 11'$		$16^{h}\ 5^{m}$		$68^{\circ}\ 9'$		$16^{h}\ 28^{m}$		$69^{\circ}\ 3'$		$17^{h}\ 37^{m}$		$68^{\circ}\ 48'$	
	s		″		s		″		s		″		s		″	
Jan. 0.9	45.66	+.70	62.3	−3.1	54.43	+.39	34.8	−3.3	11.52	+.36	19.1	−3.4	40.18	+.17	71.3	−3.6
10.9	46.44	.85	59.5	2.6	54.87	.48	31.7	2.9	11.93	.46	15.9	3.1	40.41	.28	67.8	3.4
20.9	47.36	.97	57.2	2.1	55.39	.55	29.1	2.4	12.42	.53	13.1	2.6	40.75	.38	64.5	3.1
30.8	48.38	1.06	55.4	1.5	55.97	.60	27.0	1.8	12.99	.60	10.8	2.0	41.18	.47	61.6	2.7
Feb. 9.8	49.48	1.11	54.3	0.8	56.60	.63	25.5	1.2	13.62	.64	9.0	1.4	41.70	.54	59.1	2.2
19.8	50.60	1.12	53.8	−0.1	57.24	.64	24.7	−0.5	14.27	.66	7.9	0.7	42.28	.60	57.2	1.6
Mar. 1.7	51.72	1.09	54.0	+0.5	57.88	.63	24.6	+0.2	14.94	.66	7.5	−0.1	42.90	.63	55.9	1.0
11.7	52.78	1.02	54.9	1.2	58.50	.60	25.1	0.9	15.59	.64	7.8	+0.6	43.54	.65	55.2	−0.3
21.7	53.75	.92	56.4	1.8	59.08	.55	26.3	1.5	16.21	.60	8.7	1.2	44.19	.64	55.3	+0.4
31.7	54.61	.78	58.4	2.3	59.60	.48	28.1	2.0	16.78	.54	10.2	1.8	44.81	.61	56.0	1.0
April 10.6	55.32	.63	60.8	2.7	60.05	.41	30.3	2.6	17.28	.47	12.3	2.3	45.41	.57	57.3	1.6
20.6	55.87	.46	63.7	3.0	60.41	.32	33.0	2.8	17.71	.38	14.8	2.7	45.95	.51	59.2	2.1
30.6	56.24	.28	66.8	3.1	60.69	.23	36.0	3.1	18.04	.30	17.7	3.0	46.42	.43	61.6	2.6
May 10.5	56.42	+.09	70.0	3.2	60.87	.13	39.2	3.2	18.28	.19	20.8	3.2	46.81	.35	64.4	2.9
20.5	56.42	−.09	73.2	3.2	60.95	+.03	42.5	3.3	18.42	+.09	24.1	3.3	47.12	.26	67.4	3.2
30.5	56.24	.27	76.3	3.1	60.93	−.06	45.7	3.2	18.45	−.02	27.4	3.3	47.32	.16	70.7	3.3
June 9.5	55.88	.44	79.3	2.8	60.82	.16	48.8	3.0	18.39	.12	30.6	3.1	47.43	+.05	74.1	3.4
19.4	55.36	.59	82.0	2.5	60.62	.24	51.7	2.8	18.22	.21	33.6	2.9	47.43	−.05	77.5	3.3
29.4	54.70	.73	84.4	2.2	60.33	.33	54.3	2.4	17.96	.30	36.4	2.6	47.33	.15	80.7	3.2
July 9.4	53.91	.85	86.3	1.7	59.97	.40	56.6	2.0	17.62	.39	38.9	2.3	47.13	.25	83.8	3.0
19.4	53.00	.94	87.8	1.3	59.54	.46	58.4	1.6	17.19	.46	41.0	1.9	46.84	.34	86.6	2.7
29.3	52.02	1.02	88.9	0.8	59.05	.51	59.8	1.1	16.70	.52	42.7	1.4	46.46	.42	89.1	2.3
Aug. 8.3	50.97	1.07	89.4	+0.3	58.51	.55	60.7	0.6	16.16	.57	43.9	0.9	46.00	.49	91.2	1.9
18.3	49.87	1.10	89.4	−0.2	57.95	.58	61.1	+0.1	15.57	.60	44.6	+0.4	45.47	.55	92.9	1.5
28.3	48.77	1.10	88.9	0.8	57.36	.59	61.0	−0.4	14.95	.62	44.8	−0.1	44.89	.60	94.1	1.0
Sept. 7.2	47.67	1.07	87.8	1.3	56.77	.58	60.3	0.9	14.33	.63	44.4	0.6	44.27	.63	94.8	+0.5
17.2	46.62	1.02	86.3	1.8	56.20	.56	59.1	1.4	13.70	.61	43.5	1.1	43.63	.64	95.0	−0.1
27.2	45.63	.95	84.3	2.2	55.65	.52	57.4	1.9	13.10	.58	42.2	1.6	42.99	.64	94.7	0.6
Oct. 7.1	44.73	.84	81.8	2.6	55.15	.47	55.3	2.3	12.54	.53	40.3	2.1	42.36	.62	93.8	1.1
17.1	43.94	.71	79.0	3.0	54.71	.40	52.7	2.8	12.04	.47	38.0	2.5	41.76	.58	92.4	1.6
27.1	43.30	.56	75.8	3.3	54.35	.32	49.7	3.1	11.61	.39	35.2	2.9	41.21	.52	90.5	2.1
Nov. 6.1	42.82	.39	72.4	3.5	54.07	.22	46.4	3.4	11.27	.29	32.1	3.3	40.73	.44	88.2	2.6
16.0	42.53	−.20	68.7	3.7	53.91	−.11	42.8	3.6	11.03	.18	28.7	3.5	40.33	.35	85.4	3.0
26.0	42.43	.00	65.0	3.7	53.85	.00	39.1	3.8	10.90	−.07	25.0	3.7	40.03	.25	82.2	3.3
Dec. 6.0	42.53	+.21	61.3	3.7	53.91	+.12	35.3	3.8	10.89	+.05	21.3	3.8	39.83	.14	78.8	3.5
16.0	42.84	.41	57.6	3.6	54.08	.23	31.6	3.7	11.01	.17	17.5	3.7	39.75	−.04	75.2	3.6
25.9	43.34	.58	54.1	3.3	54.37	.34	28.0	3.5	11.24	.29	13.8	3.6	39.79	+.10	71.5	3.7
35.9	44.00	+.74	50.9	−2.9	54.75	+.42	24.6	−3.2	11.58	+.39	10.4	−3.3	39.95	+.21	67.9	−3.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ψ¹ Draconis. (pr.)		50 Draconis.		δ Draconis.		τ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 17 44	° ′ 72 12	h m 18 50	° ′ 75 16	h m 19 12	° ′ 67 25	h m 19 18	° ′ 73 6
	s	″	s	″	s	″	s	″
Jan. 1.0	14.09 +.16	52.6 −3.6	34.02 −.09	41.0 −3.5	27.99 −.06	50.3 −3.5	1.68 −.14	39.0 −3.4
11.0	14.32 .30	49.1 3.4	34.03 +.08	37.5 3.5	27.98 +.04	46.8 3.6	1.61 .00	35.5 3.5
20.9	14.68 .42	45.7 3.2	34.20 .26	34.0 3.4	28.07 .15	43.2 3.5	1.68 +.14	32.0 3.5
30.9	15.16 .53	42.7 2.8	34.53 .41	30.6 3.2	28.27 .25	39.8 3.3	1.89 .28	28.6 3.3
Feb. 9.9	15.74 .63	40.2 2.3	35.01 .55	27.6 2.9	28.57 .34	36.6 3.0	2.24 .42	25.4 3.0
19.9	16.39 .69	38.2 1.7	35.62 .66	25.0 2.4	28.96 .42	33.8 2.6	2.71 .52	22.5 2.6
Mar. 1.8	17.11 .73	36.8 1.1	36.34 .76	22.8 1.9	29.42 .49	31.5 2.1	3.29 .62	20.1 2.1
11.8	17.86 .75	36.1 −0.4	37.14 .83	21.3 1.3	29.94 .55	29.7 1.5	3.95 .70	18.3 1.6
21.8	18.61 .74	36.0 +0.3	38.00 .87	20.4 −0.6	30.52 .59	28.6 0.8	4.68 .75	17.0 0.9
31.8	19.35 .72	36.6 0.9	38.89 .89	20.1 +0.1	31.11 .60	28.1 −0.2	5.45 .77	16.4 −0.3
April 10.7	20.05 .67	37.9 1.5	39.77 .87	20.5 0.7	31.72 .60	28.2 +0.5	6.23 .78	16.4 +0.4
20.7	20.68 .60	39.7 2.1	40.62 .82	21.5 1.3	32.32 .59	29.1 1.1	7.00 .75	17.1 1.0
30.7	21.24 .51	42.0 2.5	41.41 .75	23.1 1.9	32.89 .55	30.5 1.7	7.73 .71	18.4 1.6
May 10.6	21.71 .41	44.7 2.8	42.13 .66	25.2 2.3	33.42 .50	32.4 2.2	8.42 .64	20.3 2.1
20.6	22.07 .30	47.7 3.1	42.73 .55	27.8 2.6	33.89 .44	34.9 2.6	9.02 .56	22.6 2.5
30.6	22.31 .18	51.0 3.3	43.22 .42	30.7 3.1	34.29 .36	37.7 3.0	9.53 .46	25.4 2.9
June 9.6	22.44 +.06	54.3 3.3	43.58 .29	33.9 3.3	34.62 .28	40.8 3.2	9.94 .34	28.5 3.2
19.5	22.44 −.06	57.6 3.3	43.80 +.14	37.2 3.4	34.85 .18	44.2 3.4	10.22 .22	31.8 3.4
29.5	22.32 .18	60.9 3.2	43.87 −.01	40.7 3.4	34.98 +.09	47.6 3.5	10.38 +.10	35.2 3.5
July 9.5	22.08 .30	64.0 3.0	43.78 .15	44.1 3.3	35.02 −.01	51.1 3.5	10.41 −.03	38.7 3.5
19.5	21.72 .40	66.8 2.7	43.56 .30	47.4 3.2	34.96 .11	54.5 3.3	10.31 .16	42.1 3.4
29.4	21.27 .50	69.4 2.3	43.19 .43	50.5 3.0	34.80 .20	57.8 3.1	10.08 .29	45.4 3.2
Aug. 8.4	20.72 .58	71.5 2.0	42.69 .56	53.3 2.7	34.55 .30	60.9 2.9	9.73 .41	48.5 3.0
18.4	20.10 .66	73.3 1.5	42.08 .66	55.9 2.4	34.21 .38	63.7 2.6	9.27 .51	51.4 2.7
28.3	19.40 .71	74.5 1.0	41.36 .76	58.1 2.0	33.79 .45	66.1 2.2	8.71 .60	53.9 2.3
Sept. 7.3	18.67 .75	75.3 +0.5	40.57 .84	59.8 1.5	33.31 .51	68.1 1.8	8.07 .68	56.0 1.9
17.3	17.90 .77	75.6 0.0	39.67 .90	61.2 1.0	32.77 .55	69.7 1.3	7.35 .74	57.7 1.5
27.3	17.13 .77	75.4 −0.5	38.75 .93	61.9 0.5	32.20 .59	70.8 0.8	6.58 .78	58.9 1.0
Oct. 7.2	16.36 .75	74.6 1.0	37.81 .94	62.2 +0.1	31.60 .60	71.4 +0.3	5.77 .81	59.7 +0.5
17.2	15.63 .70	73.3 1.5	36.87 .93	62.0 −0.5	31.00 .60	71.4 −0.2	4.96 .81	59.8 −0.1
27.2	14.94 .64	71.5 2.0	35.96 .89	61.2 1.0	30.41 .57	71.0 0.7	4.16 .79	59.5 0.7
Nov. 6.2	14.36 .55	69.2 2.5	35.10 .82	59.9 1.6	29.85 .53	69.9 1.3	3.39 .74	58.5 1.2
16.1	13.86 .45	66.5 2.9	34.31 .73	58.1 2.1	29.34 .46	68.3 1.8	2.68 .68	57.1 1.7
26.1	13.46 .34	63.4 3.2	33.61 .62	55.7 2.5	28.89 .41	66.2 2.3	2.04 .59	55.1 2.2
Dec. 6.1	13.19 .20	60.0 3.5	33.07 .40	53.0 2.9	28.52 .33	63.6 2.8	1.50 .48	52.6 2.7
16.0	13.06 −.07	56.4 3.6	32.65 .34	49.9 3.2	28.23 .23	60.7 3.1	1.07 .36	49.7 3.0
26.0	13.06 +.08	52.7 3.7	32.38 .18	46.5 3.4	28.05 .13	57.4 3.4	0.77 .23	46.5 3.3
36.0	13.21 +.22	49.1 −3.6	32.29 −.02	43.0 −3.5	27.97 −.02	53.9 −3.5	0.60 −.10	43.1 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Draconis.		κ Cephei.		Groombridge 3241.		12 Yr. Catal. 1879.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 19 48	° ′ 69 55	h m 20 13	° ′ 77 18	h m 20 30	° ′ 72 4	h m 20 53	° ′ 80 2
	s	″	s	″	s	″	s	″
Jan. 1.1	33.50 −.18	57.6 −3.2	14.70 −.44	48.8 −3.0	30.64 −.31	67.8 −2.9	27.49 −.77	83.7 −2.7
11.0	33.38 −.07	54.2 3.4	14.34 .27	45.6 3.3	30.38 .20	64.7 3.2	26.82 .57	80.8 3.0
21.0	33.37 +.05	50.7 3.5	14.16 −.08	42.2 3.4	30.23 −.08	61.3 3.4	26.36 .34	77.7 3.2
31.0	33.48 .17	47.3 3.4	14.18 +.11	38.8 3.4	30.22 +.05	57.9 3.4	26.14 −.10	74.4 3.4
Feb. 9.9	33.71 .28	44.0 3.2	14.38 .30	35.4 3.3	30.33 .18	54.5 3.3	26.15 +.14	70.9 3.4
19.9	34.05 .39	40.9 2.8	14.77 .46	32.2 3.0	30.58 .31	51.3 3.1	26.41 .38	67.7 3.2
Mar. 1.9	34.48 .48	38.2 2.4	15.33 .63	29.3 2.7	30.95 .42	48.3 2.8	26.90 .60	64.5 2.9
11.9	35.00 .55	36.1 1.9	16.03 .76	26.9 2.2	31.42 .52	45.8 2.3	27.60 .80	61.8 2.6
21.8	35.59 .61	34.5 1.3	16.86 .87	25.0 1.6	32.00 .61	43.7 1.6	28.49 .97	59.4 2.1
31.8	36.22 .65	33.5 −0.7	17.77 .95	23.6 1.0	32.64 .67	42.2 1.2	29.54 1.10	57.6 1.5
April 10.8	36.89 .67	33.2 0.0	18.76 1.00	22.9 −0.4	33.34 .72	41.3 −0.6	30.70 1.20	56.3 1.0
20.8	37.56 .67	33.5 +0.6	19.77 1.01	22.8 +0.2	34.08 .74	41.1 0.0	31.93 1.26	55.7 −0.3
30.7	38.22 .64	34.5 1.2	20.77 .99	23.4 0.8	34.82 .74	41.5 +0.7	33.20 1.26	55.6 +0.3
May 10.7	38.84 .60	36.0 1.8	21.74 .94	24.5 1.4	35.55 .71	42.5 1.3	34.46 1.22	56.2 0.9
20.7	39.41 .54	38.1 2.3	22.64 .86	26.3 1.9	36.24 .66	44.1 1.6	35.66 1.16	57.4 1.5
30.6	39.93 .47	40.6 2.7	23.45 .75	28.5 2.4	36.87 .60	46.2 2.3	36.78 1.06	59.2 2.0
June 9.6	40.36 .38	43.5 3.1	24.14 .62	31.1 2.8	37.43 .51	48.8 2.7	37.78 .93	61.4 2.4
19.6	40.69 .29	46.7 3.3	24.70 .46	34.1 3.1	37.92 .42	51.7 3.1	38.63 .77	64.0 2.6
29.6	40.93 .18	50.1 3.5	25.10 .32	37.3 3.3	38.27 .31	54.9 3.3	39.31 .60	67.0 3.1
July 9.5	41.05 +.07	53.6 3.6	25.34 +.16	40.8 3.5	38.52 .20	58.4 3.5	39.81 .39	70.3 3.3
19.5	41.07 −.04	57.2 3.5	25.42 −.01	44.3 3.5	38.66 +.08	61.9 3.6	40.10 +.19	73.7 3.5
29.5	40.98 .15	60.6 3.4	25.32 .18	47.8 3.5	38.68 −.06	65.5 3.6	40.18 −.02	77.3 3.6
Aug. 8.4	40.78 .25	64.0 3.2	25.07 .34	51.2 3.4	38.57 .17	69.0 3.5	40.06 .22	80.9 3.5
18.4	40.47 .35	67.1 3.0	24.65 .49	54.5 3.2	38.35 .28	72.4 3.3	39.73 .42	84.4 3.4
28.4	40.08 .44	69.9 2.7	24.09 .63	57.6 2.9	38.01 .38	75.6 3.0	39.21 .61	87.7 3.3
Sept. 7.4	39.60 .51	72.4 2.3	23.39 .75	60.4 2.6	37.58 .48	78.5 2.8	38.51 .79	90.9 3.1
17.3	39.05 .58	74.5 1.9	22.57 .86	62.9 2.2	37.05 .56	81.2 2.4	37.64 .94	93.8 2.7
27.3	38.45 .62	76.1 1.4	21.66 .94	64.9 1.8	36.45 .63	83.4 2.0	36.62 1.08	96.4 2.4
Oct. 7.3	37.80 .66	77.2 0.8	20.67 1.01	66.5 1.3	35.79 .68	85.1 1.5	35.48 1.19	98.6 1.9
17.3	37.14 .67	77.9 +0.3	19.63 1.05	67.6 0.8	35.09 .71	86.4 1.0	34.25 1.27	100.3 1.5
27.2	36.47 .66	77.9 −0.2	18.57 1.06	68.1 +0.3	34.36 .73	87.2 +0.5	32.94 1.32	101.5 0.9
Nov. 6.2	35.82 .63	77.4 0.8	17.51 1.05	68.1 −0.3	33.63 .72	87.3 −0.1	31.61 1.35	102.2 +0.4
16.2	35.20 .59	76.4 1.3	16.48 1.00	67.5 0.9	32.91 .70	87.0 0.7	30.27 1.33	102.3 −0.2
26.1	34.64 .53	74.8 1.9	15.51 .93	66.4 1.4	32.23 .66	86.0 1.2	28.97 1.27	101.8 0.6
Dec. 6.1	34.15 .46	72.7 2.3	14.62 .83	64.7 2.0	31.61 .59	84.4 1.7	27.74 1.16	100.7 1.4
16.1	33.74 .36	70.1 2.7	13.86 .70	62.5 2.4	31.06 .50	82.4 2.3	26.62 1.04	99.1 1.9
26.1	33.43 .25	67.1 3.1	13.23 .55	59.8 2.8	30.61 .40	79.8 2.7	25.64 .89	96.9 2.4
36.0	33.23 −.13	63.8 −3.3	12.76 −.39	56.8 −3.1	30.26 −.29	76.9 −3.0	24.83 −.71	94.3 −2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cephei.		11 Cephei.		79 Draconis.		226 Cephei (B).	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North*	Right Ascension.	Declination *North.*
	h m 21 26	° ′ 69 58	h m 21 39	° ′ 70 41	h m 21 51	° ′ 73 4	h m 22 29	° ′ 75 32
	s	″	s	″	s	″	s	″
Jan. 1.1	54.39 −.40	55.2 −2.4	56.44 −.43	75.7 −2.3	11.43 −.54	42.7 −2.1	55.08 −.72	47.7 −1.6
11.1	54.04 .31	52.5 2.8	56.04 .35	73.2 2.7	10.93 .44	40.3 2.6	54.40 .63	45.8 2.1
21.1	53.78 .21	49.5 3.1	55.74 .25	70.3 3.0	10.54 .33	37.5 2.9	53.82 .52	43.4 2.6
31.0	53.62 −.10	46.3 3.3	55.53 .14	67.1 3.2	10.27 .21	34.5 3.2	53.37 .38	40.7 2.9
Feb. 10.0	53.58 +.01	43.0 3.3	55.46 −.02	63.9 3.3	10.13 −.07	31.2 3.3	53.05 .24	37.6 3.1
20.0	53.65 .13	39.7 3.2	55.49 +.10	60.5 3.3	10.13 +.06	27.9 3.3	52.89 −.08	34.4 3.3
Mar. 2.0	53.84 .25	36.5 3.0	55.65 .22	57.3 3.1	10.26 .20	24.6 3.2	52.89 +.08	31.1 3.2
11.9	54.14 .35	33.6 2.7	55.93 .33	54.4 2.8	10.53 .33	21.6 2.9	53.05 .24	27.9 3.1
21.9	54.55 .45	31.1 2.3	56.31 .43	51.7 2.4	10.93 .45	18.8 2.5	53.38 .40	25.0 2.8
31.9	55.04 .53	29.1 1.8	56.79 .52	49.6 1.9	11.44 .56	16.5 2.1	53.85 .54	22.3 2.4
April 10.9	55.61 .60	27.6 1.2	57.36 .60	47.9 1.4	12.06 .65	14.7 1.5	54.45 .66	20.1 2.0
20.8	56.23 .64	26.7 −0.6	57.99 .65	46.8 0.8	12.75 .72	13.5 0.9	55.16 .76	18.4 1.4
30.8	56.89 .67	26.4 0.0	58.67 .69	46.4 −0.1	13.49 .76	12.8 −0.2	55.97 .84	17.2 0.9
May 10.8	57.57 .68	26.7 +0.7	59.37 .70	46.6 +0.5	14.27 .78	12.8 +0.4	56.84 .89	16.6 −0.3
20.7	58.25 .66	27.7 1.2	60.07 .69	47.3 1.1	15.06 .78	13.4 0.9	57.75 .90	16.7 +0.3
30.7	58.90 .63	29.2 1.8	60.75 .66	48.7 1.6	15.83 .75	14.6 1.5	58.65 .90	17.3 0.9
June 9.7	59.50 .58	31.2 2.3	61.39 .61	50.6 2.1	16.56 .70	16.3 2.0	59.54 .86	18.5 1.5
19.7	60.05 .51	33.7 2.7	61.98 .55	53.0 2.6	17.23 .63	18.5 2.4	60.38 .81	20.3 2.0
29.6	60.52 .43	36.6 3.0	62.49 .47	55.8 3.0	17.83 .55	21.2 2.8	61.15 .73	22.5 2.4
July 9.6	60.90 .35	39.8 3.3	62.91 .36	58.9 3.2	18.33 .45	24.2 3.2	61.83 .63	25.2 2.8
19.6	61.19 .24	43.2 3.5	63.25 .28	62.2 3.5	18.73 .34	27.5 3.4	62.41 .52	28.2 3.2
29.6	61.38 .13	46.8 3.6	63.48 .17	65.8 3.6	19.01 .22	31.0 3.6	62.86 .39	31.5 3.4
Aug. 8.5	61.45 +.02	50.4 3.6	63.59 +.06	69.4 3.6	19.17 +.10	34.6 3.7	63.19 .26	35.0 3.6
18.5	61.43 −.08	54.0 3.6	63.60 −.06	73.1 3.6	19.21 −.02	38.3 3.7	63.38 +.12	38.7 3.7
28.5	61.29 .18	57.6 3.4	63.50 .15	76.7 3.5	19.12 .14	41.9 3.6	63.44 −.01	42.4 3.7
Sept. 7.4	61.06 .28	60.9 3.2	63.30 .25	80.1 3.3	18.92 .26	45.4 3.4	63.35 .15	46.1 3.6
17.4	60.74 .37	64.0 3.0	63.00 .34	83.3 3.1	18.61 .36	48.8 3.2	63.14 .28	49.7 3.5
27.4	60.33 .44	66.8 2.6	62.61 .43	86.3 2.8	18.20 .46	51.9 2.9	62.80 .40	53.1 3.3
Oct. 7.4	59.85 .51	69.3 2.2	62.14 .50	88.9 2.4	17.69 .54	54.6 2.6	62.34 .51	56.2 3.0
17.3	59.31 .56	71.3 1.8	61.61 .55	91.1 2.0	17.11 .61	57.0 2.1	61.78 .61	59.0 2.6
27.3	58.73 .59	72.8 1.3	61.03 .60	92.8 1.5	16.46 .67	58.9 1.7	61.13 .69	61.5 2.2
Nov. 6.3	58.13 .61	73.8 0.7	60.42 .62	94.0 0.9	15.77 .70	60.3 1.1	60.40 .76	63.4 1.8
16.3	57.51 .62	74.2 +0.1	59.79 .63	94.6 +0.3	15.06 .72	61.1 +0.5	59.61 .80	64.9 1.2
26.2	56.90 .60	74.1 −0.5	59.15 .62	94.7 −0.3	14.33 .72	61.4 −0.1	58.79 .83	65.7 +0.6
Dec. 6.2	56.31 .57	73.3 1.1	58.54 .60	94.1 0.9	13.62 .70	61.0 0.7	57.96 .83	66.0 0.0
16.2	55.76 .52	72.0 1.6	57.96 .55	92.9 1.4	12.94 .66	60.1 1.2	57.13 .81	65.7 −0.6
26.1	55.28 .45	70.1 2.1	57.43 .50	91.2 2.0	12.31 .59	58.5 1.8	56.34 .76	64.7 1.3
36.1	54.86 −.37	67.7 −2.5	56.97 −.43	89.0 −2.5	11.76 −.51	56.5 −2.3	55.60 −.69	63.2 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Cephei.				ο Cephei.				γ Cephei.				Groombridge 4163.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	h m		° ′		h m		° ′		h m		° ′		h m		° ′	
	22 44		65 29		23 13		67 22		23 33		76 53		23 48		73 40	
	s		″		s		″		s		″		s		″	
Jan. 1.2	56.81	-.40	83.2	-1.5	10.77	-.46	80.5	-1.2	55.66	-.87	44.3	-0.8	24.66	-.70	31.4	-0.6
11.2	56.44	.35	81.4	2.0	10.33	.42	79.0	1.7	54.81	.82	43.2	1.3	23.99	.66	30.5	1.2
21.1	56.11	.29	79.1	2.5	9.92	.37	77.1	2.2	54.02	.75	41.7	1.9	23.35	.60	29.0	1.7
31.1	55.85	.22	76.5	2.8	9.58	.30	74.7	2.6	53.32	.64	39.5	2.3	22.78	.53	27.0	2.2
Feb. 10.1	55.67	.14	73.5	3.0	9.32	.22	71.9	2.9	52.75	.50	37.0	2.7	22.30	.43	24.6	2.6
20.1	55.57	-.06	70.4	3.1	9.14	.13	69.0	3.0	52.31	.35	34.1	3.0	21.92	.31	21.8	2.9
Mar. 2.0	55.56	+.04	67.3	3.1	9.05	-.03	65.9	3.1	52.05	-.18	31.0	3.1	21.67	.18	18.8	3.1
12.0	55.64	.13	64.2	3.0	9.07	+.07	62.8	3.0	51.96	.00	27.9	3.2	21.56	-.04	15.7	3.1
22.0	55.83	.23	61.4	2.7	9.20	.18	59.8	2.8	52.05	+.18	24.7	3.1	21.60	+.11	12.6	3.0
31.9	56.10	.32	58.8	2.3	9.43	.28	57.1	2.6	52.32	.36	21.7	2.8	21.78	.25	9.6	2.8
April 10.9	56.46	.40	56.7	1.9	9.75	.37	54.7	2.2	52.76	.52	19.0	2.5	22.10	.39	6.9	2.5
20.9	56.89	.46	55.1	1.4	10.17	.45	52.8	1.7	53.36	.66	16.7	2.1	22.55	.51	4.6	2.2
30.9	57.38	.52	54.0	0.8	10.66	.52	51.4	1.2	54.09	.79	14.8	1.6	23.12	.62	2.6	1.7
May 10.8	57.93	.56	53.5	-0.2	11.21	.57	50.5	-0.6	54.93	.89	13.4	1.1	23.79	.71	1.2	1.2
20.8	58.50	.58	53.6	+0.4	11.81	.61	50.2	0.0	55.86	.96	12.7	-0.5	24.54	.77	0.3	-0.6
30.8	59.08	.58	54.2	1.0	12.43	.63	50.5	+0.6	56.84	.99	12.4	+0.1	25.33	.81	0.0	0.0
June 9.8	59.66	.57	55.5	1.5	13.06	.62	51.4	1.1	57.84	1.00	12.8	0.7	26.17	.83	0.2	+0.5
19.7	60.22	.54	57.2	2.0	13.67	.61	52.8	1.7	58.84	.98	13.7	1.2	27.00	.82	1.0	1.1
29.7	60.74	.50	59.5	2.4	14.27	.57	54.7	2.1	59.81	.94	15.2	1.7	27.81	.80	2.4	1.6
July 9.7	61.22	.44	62.1	2.8	14.82	.52	57.0	2.5	60.71	.87	17.2	2.2	28.59	.75	4.2	2.1
19.6	61.63	.38	65.1	3.1	15.31	.46	59.7	2.9	61.54	.78	19.6	2.6	29.30	.68	6.5	2.5
29.6	61.97	.30	68.3	3.4	15.73	.39	62.8	3.2	62.27	.67	22.4	3.0	29.94	.60	9.3	2.9
Aug. 8.6	62.23	.22	71.8	3.5	16.08	.31	66.1	3.4	62.88	.55	25.6	3.3	30.50	.50	12.3	3.2
18.6	62.41	.14	75.3	3.6	16.34	.22	69.6	3.5	63.36	.41	29.0	3.5	30.95	.40	15.6	3.4
28.5	62.51	+.05	78.9	3.6	16.52	.13	73.2	3.6	63.71	.28	32.6	3.6	31.29	.29	19.1	3.6
Sept. 7.5	62.52	-.03	82.5	3.5	16.61	+.05	76.8	3.6	63.91	+.13	36.2	3.7	31.53	.17	22.8	3.7
17.5	62.45	.11	86.0	3.4	16.61	-.04	80.4	3.5	63.98	-.01	40.0	3.7	31.64	+.06	26.4	3.7
27.5	62.30	.18	89.3	3.2	16.52	.13	83.9	3.4	63.90	.15	43.7	3.6	31.64	-.06	30.1	3.6
Oct. 7.4	62.08	.25	92.4	2.9	16.36	.20	87.1	3.1	63.68	.29	47.2	3.4	31.53	.17	33.6	3.5
17.4	61.80	.31	95.1	2.5	16.12	.27	90.1	2.8	63.32	.42	50.5	3.2	31.31	.27	37.0	3.2
27.4	61.46	.36	97.4	2.1	15.81	.34	92.8	2.4	62.84	.54	53.6	2.9	30.98	.37	40.1	2.9
Nov. 6.3	61.07	.40	99.3	1.6	15.44	.38	95.0	2.0	62.24	.65	56.4	2.6	30.56	.46	42.8	2.5
16.3	60.65	.43	100.7	1.1	15.03	.43	96.7	1.5	61.55	.74	58.7	2.1	30.06	.54	45.2	2.1
26.3	60.21	.45	101.5	+0.6	14.57	.47	98.0	1.0	60.77	.81	60.5	1.5	29.48	.61	47.1	1.6
Dec. 6.3	59.75	.45	101.8	0.0	14.09	.49	98.7	+0.4	59.92	.86	61.7	0.9	28.84	.66	48.4	1.0
16.2	59.30	.45	101.4	-0.6	13.60	.49	98.8	-0.2	59.04	.89	62.3	+0.3	28.16	.69	49.1	+0.4
26.2	58.86	.42	100.5	1.2	14.12	.48	98.3	0.8	58.14	.89	62.3	-0.3	27.47	.70	49.2	-0.2
36.2	58.45	-.38	99.0	-1.7	13.65	-.45	97.2	-1.4	57.26	-.87	61.7	-0.9	26.77	-.69	48.7	-0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Hydri.		Mean Solar Date.	β Chamæleontis.	
	Right Ascension.	Declination *South.*		Right Ascension.	Declination *South.*
	$0^{h}\ 18^{m}$	$77^{\circ}\ 59'$		$12^{h}\ 10^{m}$	$78^{\circ}\ 34'$
	s	″		s	″
Jan. 0.2	39.47 −.93	96.3 −0.7	Jan. 0.7	40.00 +1.21	5.8 +1.4
10.2	38.55 .88	95.2 1.3	10.7	41.17 1.12	7.5 2.0
20.2	37.70 .81	93.6 1.9	20.7	42.24 1.01	9.8 2.5
30.1	36.93 .72	91.4 2.4	30.6	43.20 .89	12.5 2.9
Feb. 9.1	36.27 .60	88.8 2.8	Feb. 9.6	44.03 .75	15.6 3.3
19.1	35.73 .48	85.8 3.2	19.6	44.70 .59	19.1 3.5
Mar. 1.1	35.33 .33	82.5 3.5	Mar. 1.6	45.20 .42	22.7 3.7
11.0	35.08 .18	78.9 3.6	11.5	45.54 .25	26.4 3.8
21.0	34.98 −.03	75.2 3.7	21.5	45.71 + .08	30.2 3.8
31.0	35.04 +.13	71.4 3.8	31.5	45.71 − .08	33.9 3.7
Apr. 10.0	35.26 .29	67.6 3.7	Apr. 10.5	45.55 .23	37.5 3.5
19.9	35.64 .45	64.0 3.6	20.4	45.24 .38	40.9 3.3
29.9	36.17 .60	60.5 3.4	30.4	44.79 .52	44.0 3.0
May 9.9	36.84 .73	57.3 3.0	May 10.4	44.21 .63	46.8 2.6
19.8	37.64 .86	54.4 2.7	20.3	43.52 .74	49.1 2.2
29.8	38.55 .96	51.8 2.3	30.3	42.73 .82	51.0 1.7
June 8.8	39.55 1.04	49.8 1.8	June 9.3	41.87 .89	52.4 1.2
18.8	40.62 1.09	48.2 1.3	19.3	40.95 .94	53.3 0.7
28.7	41.73 1.12	47.2 0.8	29.2	40.00 .96	53.7 +0.1
July 8.7	42.85 1.11	46.7 −0.2	July 9.2	39.04 .96	53.5 −0.5
18.7	43.95 1.07	46.8 +0.4	19.2	38.10 .91	52.7 1.0
28.7	44.99 1.01	47.4 0.9	29.2	37.21 .85	51.5 1.5
Aug. 7.6	45.96 .91	48.7 1.5	Aug. 8.1	36.40 .76	49.7 2.0
17.6	46.81 .78	50.4 2.0	18.1	35.70 .63	47.5 2.4
27.6	47.52 .63	52.6 2.4	28.1	35.13 .49	44.9 2.7
Sept. 6.5	48.07 .46	55.2 2.7	Sept. 7.1	34.73 .31	42.0 2.9
16.5	48.44 .26	58.1 3.0	17.0	34.50 − .13	39.0 3.1
26.5	48.63 +.09	61.1 3.1	27.0	34.48 + .08	35.9 3.1
Oct. 6.5	48.62 −.11	64.3 3.1	Oct. 7.0	34.66 .28	32.9 3.0
16.4	48.41 .30	67.3 3.0	16.9	35.04 .49	30.0 2.8
26.4	48.03 .46	70.3 2.8	26.9	35.63 .68	27.4 2.4
Nov. 5.4	47.49 .62	72.9 2.4	Nov. 5.9	36.40 .85	25.2 2.0
15.4	46.80 .75	75.1 2.0	15.9	37.33 1.00	23.5 1.5
25.3	46.00 .84	76.9 1.5	25.8	38.39 1.11	22.4 0.9
Dec. 5.3	45.12 .90	78.1 0.9	Dec. 5.8	39.55 1.18	21.9 −0.2
15.3	44.20 .94	78.6 +0.3	15.8	40.75 1.21	22.0 +0.4
25.2	43.25 .94	78.6 −0.3	25.7	41.98 1.21	22.7 1.0
35.2	42.32 −.92	77.9 −1.0	35.7	43.17 +1.17	24.1 +1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis. Right Ascension.	α Trianguli Australis. Declination *South.*	Mean Solar Date.	σ Octantis. Right Ascension.	σ Octantis. Declination *South.*
	h m 16 34	° ′ 68 46		h 17	° ′ 89 16
	s	″		m s	″
Jan. 0.9	34.09 +.54	23.5 −1.7	Jan. 1.0	59 7.58 + 7.00	30.0 −3.2
10.9	34.67 .61	21.9 1.4	10.9	59 16.25 10.25	26.9 2.9
20.8	35.32 .67	20.7 1.0	20.9	59 27.92 13.01	24.1 2.6
30.8	36.02 .73	19.9 0.6	30.9	59 42.13 15.35	21.7 2.3
Feb. 9.8	36.77 .75	19.5 −0.2	Feb. 9.9	59 58.49 17.29	19.6 1.9
19.8	37.52 .75	19.6 +0.3	19.8	60 16.56 18.75	18.0 1.4
Mar. 1.7	38.27 .75	20.0 0.6	Mar. 1.8	60 35.83 19.74	16.8 0.9
11.7	39.02 .73	20.8 1.0	11.7	60 55.88 20.27	16.1 −0.4
21.7	39.73 .69	21.9 1.4	21.7	61 16.22 20.35	15.9 +0.1
31.7	40.41 .65	23.6 1.7	31.7	61 36.42 19.97	16.2 0.5
Apr. 10.6	41.03 .60	25.4 1.9	Apr. 10.7	61 56.01 19 17	16.9 1.0
20.6	41.60 .53	27.4 2.2	20.7	62 14.63 17.99	18.2 1.5
30.6	42.10 .46	29.7 2.4	30.6	62 31.86 16.40	19.8 1.9
May 10.5	42.53 .38	32.1 2.5	May 10.6	62 47.32 14.47	21.9 2.2
20.5	42.86 .30	34.7 2.6	20.6	63 0.71 12.27	24.2 2.5
30.5	43.13 .21	37.3 2.6	30.6	63 11.76 9.75	26.9 2.8
June 9.5	43.23 .11	39.9 2.6	June 9.5	63 20.13 7.00	29.8 3.0
19.4	43.34 +.01	42.4 2.5	19.5	63 25.71 4.13	32.8 3.1
29.4	43.30 −.09	44.9 2.3	29.5	63 28.35 + 1.17	36.0 3.1
July 9.4	43.16 .19	47.1 2.1	July 9.4	63 27.96 − 1.86	39.1 3.1
19.4	42.93 .28	49.0 1.8	19.4	63 24.54 4.92	42.1 2.9
29.3	42.60 .36	50.7 1.5	29.4	63 18.19 7.75	44.9 2.7
Aug. 8.3	42.21 .43	52.0 1.1	Aug. 8.4	63 9.13 10.33	47.4 2.4
18.3	41.75 .48	52.9 0.6	18.3	62 57.63 12.61	49.6 2.0
28.2	41.24 .52	53.3 +0.2	28.3	62 44.06 14.45	51.4 1.5
Sept. 7.2	40.72 .53	53.2 −0.3	Sept. 7.3	62 28.89 15.82	52.6 1.0
17.2	40.19 .52	52.7 0.8	17.3	62 12.62 16.60	53.3 +0.4
27.2	39.68 .48	51.6 1.2	27.2	61 55.90 16.77	53.3 −0.2
Oct. 7.1	39.23 .42	50.2 1.6	Oct. 7.2	61 39.31 16.23	52.8 0.8
17.1	38.85 .34	48.4 2.0	17.2	61 23.63 15.17	51.7 1.4
27.1	38.55 .24	46.2 2.3	27.1	61 9.19 13.48	50.0 1.9
Nov. 6.1	38.37 −.12	43.8 2.4	Nov. 6.1	60 56.88 11.12	47.8 2.4
16.0	38.30 .00	41.3 2.5	16.1	60 47.09 8.35	45.2 2.8
26.0	38.37 +.12	38.8 2.5	26.1	60 40.30 5.25	42.3 3.0
Dec. 6.0	38.55 .25	36.3 2.4	Dec. 6.0	60 36.68 − 1.90	39.1 3.2
15.9	38.87 .37	33.9 2.2	16.0	60 36.56 + 1.67	35.9 3.3
25.9	39.29 .48	31.8 1.9	26.0	60 39.94 4.96	32.6 3.2
35.9	39.82 +.56	30.1 −1.5	36.0	60 46.36 + 7.81	29.4 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ. Right Ascension.	α Andromedæ. Declination *North.*	γ Pegasi. (*Algenib.*) Right Ascension.	γ Pegasi. (*Algenib.*) Declination *North.*	α Cassiopeæ. Right Ascension.	α Cassiopeæ. Declination *North.*	β Ceti. Right Ascension.	β Ceti. Declination *South.*
	h m 0 1	° ′ 28 21	h m 0 6	° ′ 14 26	h m 0 32	° ′ 55 48	h m 0 36	° ′ 18 42
	s	″	s	″	s	″	s	″
Jan. 0.2	31.13 −.15	30.8 −0.9	23.33 −.13	42.0 −0.8	59.48 −.29	41.7 −0.3	54.46 −.13	72.0 +0.6
10.2	30.98 .14	29.8 1.1	23.21 .12	41.1 1.0	59.19 .29	41.1 0.8	54.32 .13	72.5 0.4
20.2	30.84 .13	28.5 1.4	23.09 .11	40.1 1.1	58.90 .29	40.1 1.3	54.19 .13	72.8 +0.1
30.2	30.71 .12	27.0 1.5	22.98 .10	39.0 1.1	58.62 .27	38.6 1.7	54.07 .12	72.8 −0.1
Feb. 9.1	30.60 .10	25.4 1.6	22.88 .08	37.9 1.1	58.36 .24	36.7 2.1	53.96 .10	72.5 0.4
19.1	30.52 .07	23.7 1.7	22.81 .06	36.8 1.0	58.15 .19	34.5 2.3	53.86 .08	72.0 0.7
Mar. 1.1	30.47 −.03	22.1 1.7	22.77 −.03	35.8 0.9	57.98 .14	32.1 2.5	53.79 .06	71.2 0.9
11.0	30.45 +.01	20.4 1.5	22.76 .00	35.0 0.8	57.87 −.07	29.5 2.6	53.75 −.03	70.1 1.2
21.0	30.48 .05	19.0 1.3	22.78 +.04	34.3 0.6	57.83 .00	26.9 2.6	53.74 +.01	68.8 1.4
31.0	30.55 .09	17.7 1.1	22.84 .08	33.9 −0.3	57.87 +.07	24.4 2.4	53.77 .05	67.2 1.7
April 10.0	30.67 .14	16.8 0.8	22.95 .13	33.7 0.0	57.97 .14	22.1 2.2	53.84 .09	65.5 1.9
19.9	30.83 .19	16.2 −0.4	23.10 .17	33.9 +0.3	58.16 .22	20.0 1.9	53.95 .13	63.5 2.1
29.9	31.04 .23	15.9 0.0	23.28 .21	34.3 0.6	58.41 .28	18.3 1.5	54.10 .17	61.4 2.2
May 9.9	31.28 .26	16.1 +0.3	23.51 .24	35.1 0.9	58.72 .34	17.0 1.1	54.30 .21	59.1 2.3
19.9	31.56 .29	16.6 0.7	23.76 .27	36.2 1.2	59.09 .39	16.2 0.6	54.53 .25	56.8 2.3
29.8	31.87 .32	17.5 1.1	24.04 .29	37.6 1.5	59.50 .43	15.8 −0.1	54.79 .27	54.5 2.3
June 8.8	32.19 .33	18.8 1.5	24.34 .31	39.2 1.7	59.95 .46	16.0 +0.4	55.08 .30	52.2 2.2
18.8	32.53 .33	20.4 1.8	24.65 .31	41.0 1.9	60.41 .47	16.7 0.9	55.39 .31	50.0 2.1
23.7	32.86 .33	22.3 2.0	24.97 .31	42.9 2.0	60.89 .47	17.9 1.4	55.70 .31	48.0 1.9
July 8.7	33.18 .32	24.4 2.2	25.27 .30	45.0 2.1	61.35 .46	19.4 1.8	56.01 .31	46.2 1.7
18.7	33.49 .30	26.7 2.3	25.56 .28	47.1 2.1	61.80 .43	21.4 2.2	56.32 .30	44.6 1.4
23.7	33.77 .27	29.1 2.4	25.83 .26	49.2 2.1	62.22 .40	23.8 2.5	56.61 .28	43.4 1.1
Aug. 7.6	34.02 .23	31.6 2.4	26.07 .23	51.3 2.0	62.60 .36	26.4 2.8	56.88 .26	42.4 0.8
17.6	34.24 .20	34.0 2.4	26.28 .19	53.2 1.9	62.93 .31	29.3 3.0	57.13 .23	41.8 −0.4
27.6	34.41 .16	36.4 2.4	26.45 .15	55.0 1.7	63.22 .26	32.3 3.1	57.33 .19	41.6 0.0
Sept. 6.6	34.55 .12	38.7 2.3	26.59 .12	56.6 1.5	63.45 .20	35.4 3.2	57.50 .15	41.8 +0.3
16.5	34.64 .07	40.9 2.1	26.69 .08	58.0 1.3	63.63 .15	38.6 3.2	57.64 .11	42.2 0.6
26.5	34.70 +.03	42.9 1.9	26.75 .04	59.2 1.1	63.74 .09	41.8 3.1	57.73 .07	43.0 0.9
Oct. 6.5	34.71 .00	44.6 1.7	26.77 +.01	60.2 0.9	63.80 +.03	44.9 3.0	57.78 +.04	44.0 1.1
16.4	34.69 −.03	46.2 1.4	26.76 −.02	61.0 0.6	63.81 −.02	47.8 2.8	57.80 .00	45.2 1.3
26.4	34.64 .06	47.5 1.1	26.72 .05	61.5 0.4	63.76 .07	50.6 2.6	57.78 −.03	46.5 1.4
Nov. 5.4	34.57 .09	48.5 0.9	26.66 .07	61.8 +0.2	63.66 .12	53.0 2.3	57.74 .06	47.9 1.4
15.4	34.47 .11	49.2 0.6	26.58 .09	61.9 0.0	63.52 .17	55.2 1.9	57.67 .08	49.3 1.4
25.3	34.35 .13	49.6 +0.2	26.48 .10	61.8 −0.2	63.33 .21	56.9 1.5	57.58 .10	50.7 1.3
Dec. 5.3	34.22 .14	49.7 −0.1	26.37 .12	61.5 0.4	63.10 .24	58.2 1.1	57.47 .11	51.9 1.2
15.3	34.08 .15	49.4 0.4	26.25 .12	61.0 0.6	62.85 .26	59.0 0.6	57.35 .12	53.0 1.0
25.3	33.93 .15	48.9 0.7	26.13 .13	60.3 0.8	62.57 .28	59.4 +0.1	57.22 .13	53.9 0.8
35.2	33.78 −.15	48.0 −1.0	26.00 −.12	59.5 −0.9	62.28 −.30	59.2 −0.5	57.09 −.14	54.5 +0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Piscium.		θ¹ Ceti.		η Piscium.		α Eridani. (*Achernar.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 0 56	° ′ 7 10	h m 1 17	° ′ 8 51	h m 1 24	° ′ 14 39	h m 1 32	° ′ 57 54
	s	″	s	″	s	″	s	″
Jan. 0.3	2.78 −.12	22.6 −0.7	22.67 −.12	82.1 +0.9	22.55 −.12	32.9 −0.6	44.96 −.33	68.3 +0.7
10.2	2.65 .13	21.8 0.8	22.55 .13	82.9 0.7	22.42 .13	32.3 0.7	44.62 .34	68.7 +0.2
20.2	2.53 .13	21.1 0.8	22.41 .13	83.5 0.5	22.29 .14	31.6 0.8	44.28 .34	68.6 −0.4
30.2	2.40 .12	20.3 0.7	22.28 .13	83.9 0.3	22.14 .14	30.8 0.8	43.95 .33	67.9 1.0
Feb. 9.2	2.28 .11	19.6 0.7	22.15 .12	84.1 +0.1	22.01 .13	29.9 0.9	43.63 .31	66.7 1.6
19.1	2.17 .09	19.0 0.6	22.03 .11	84.1 −0.1	21.88 .12	29.1 0.8	43.33 .28	64.9 2.0
Mar. 1.1	2.09 .07	18.4 0.5	21.93 .09	83.9 0.3	21.77 .10	28.3 0.8	43.08 .24	62.8 2.4
11.1	2.03 .04	18.1 0.3	21.85 .06	83.4 0.6	21.68 .07	27.5 0.7	42.86 .19	60.2 2.7
21.1	2.01 −.01	17.8 −0.2	21.80 −.03	82.7 0.8	21.63 −.03	26.9 0.5	42.70 .13	57.3 3.0
31.0	2.02 +.03	17.8 +0.1	21.79 +.01	81.8 1.1	21.61 +.01	26.5 0.3	42.59 .07	54.1 3.3
April 10.0	2.07 .07	18.1 0.4	21.82 .05	80.6 1.3	21.64 .05	26.3 −0.1	42.56 −.01	50.7 3.4
20.0	2.17 .12	18.6 0.6	21.89 .09	79.2 1.5	21.71 .09	26.3 +0.1	42.58 +.06	47.2 3.5
29.9	2.31 .16	19.3 0.9	22.00 .14	77.6 1.7	21.82 .14	26.5 0.4	42.69 .14	43.7 3.6
May 9.9	2.49 .20	20.3 1.1	22.16 .18	75.8 1.9	21.99 .18	27.1 0.7	42.86 .21	40.1 3.6
19.9	2.70 .23	21.6 1.4	22.36 .21	73.8 2.0	22.19 .22	27.9 0.9	43.09 .27	36.7 3.3
29.9	2.95 .26	23.1 1.6	22.59 .24	71.7 2.1	22.43 .26	28.9 1.2	43.40 .33	33.5 3.1
June 8.8	3.23 .28	24.7 1.7	22.85 .27	69.6 2.1	22.69 .28	30.3 1.4	43.75 .38	30.5 2.8
18.8	3.52 .30	26.5 1.8	23.13 .29	67.5 2.1	22.98 .30	31.8 1.6	44.16 .42	27.9 2.4
28.8	3.83 .31	28.4 1.9	23.43 .30	65.4 2.0	23.29 .31	33.4 1.7	44.60 .45	25.6 2.0
July 8.8	4.13 .30	30.3 1.9	23.73 .30	63.4 1.9	23.60 .31	35.2 1.8	45.06 .47	23.8 1.5
18.7	4.44 .29	32.3 1.9	24.03 .30	61.6 1.7	23.91 .30	37.0 1.9	45.54 .47	22.6 1.0
28.7	4.72 .28	34.1 1.8	24.33 .29	60.0 1.5	24.21 .29	38.9 1.9	46.01 .47	21.8 −0.4
Aug. 7.7	4.99 .26	35.9 1.7	24.60 .27	58.7 1.2	24.50 .27	40.8 1.8	46.47 .45	21.7 +0.2
17.6	5.23 .23	37.5 1.5	24.86 .24	57.6 0.9	24.76 .25	42.5 1.7	46.90 .41	22.1 0.7
27.6	5.44 .20	38.9 1.3	25.09 .21	56.9 0.6	24.99 .22	44.2 1.6	47.30 .37	23.1 1.2
Sept. 6.6	5.62 .16	40.1 1.1	25.28 .18	56.4 −0.3	25.20 .19	45.7 1.4	47.64 .31	24.6 1.7
16.6	5.76 .13	41.1 0.9	25.45 .15	56.3 0.0	25.37 .16	47.0 1.2	47.92 .26	26.6 2.2
26.5	5.87 .09	41.9 0.6	25.58 .11	56.4 +0.3	25.51 .12	48.2 1.0	48.14 .18	28.9 2.5
Oct. 6.5	5.95 .06	42.4 0.4	25.67 .08	56.9 0.6	25.62 .09	49.1 0.8	48.28 .11	31.6 2.8
16.5	5.99 +.03	42.7 +0.2	25.73 .05	57.6 0.8	25.69 .06	49.9 0.6	48.36 +.04	34.5 2.9
26.5	6.00 .00	42.8 0.0	25.76 +.02	58.4 0.9	25.74 +.03	50.4 0.5	48.37 −.03	37.5 3.0
Nov. 5.4	5.99 −.03	42.8 −0.2	25.76 −.01	59.5 1.0	25.75 .00	50.8 0.3	48.31 .09	40.4 3.0
15.4	5.95 .05	42.5 0.3	25.73 .04	60.6 1.1	25.74 −.02	50.9 +0.1	48.18 .15	43.3 2.7
25.4	5.89 .07	42.2 0.4	25.68 .06	61.7 1.1	25.70 .05	50.9 −0.1	48.00 .20	45.8 2.4
Dec. 5.3	5.81 .09	41.7 0.5	25.61 .08	62.8 1.1	25.63 .07	50.8 0.2	47.77 .25	48.1 2.0
15.3	5.71 .10	41.1 0.6	25.52 .10	63.9 1.0	25.55 .09	50.5 0.4	47.50 .29	49.9 1.5
25.3	5.60 .11	40.4 0.7	25.41 .11	64.8 0.9	25.44 .11	50.1 0.5	47.20 .31	51.2 1.0
35.3	5.48 −.12	39.7 −0.7	25.29 −.12	65.7 +0.8	25.32 −.12	49.5 −0.6	46.88 −.33	51.9 +0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	o Piscium.		β Arietis.		α Arietis.		65 Ceti (ξ^1).	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 38	° ′ 8 29	h m 1 47	° ′ 20 9	h m 1 59	° ′ 22 49	h m 2 5	° ′ 8 13
	s	″	s	″	s	″	s	″
Jan. 0.3	22.86 −.12	11.1 −0.7	18.46 −.12	24.7 −0.4	41.59 −.12	57.0 −0.3	57.74 −.11	13.3 −0.7
10.3	22.73 .13	10.4 0.7	18.33 .14	24.2 0.6	41.46 .14	56.7 0.5	57.62 .13	12.6 0.6
20.2	22.60 .14	9.7 0.7	18.19 .15	23.6 0.7	41.31 .15	56.1 0.6	57.49 .14	12.0 0.6
30.2	22.46 .14	9.0 0.7	18.04 .15	22.8 0.8	41.15 .16	55.4 0.8	57.34 .15	11.3 0.6
Feb. 9.2	22.32 .13	8.4 0.6	17.88 .15	22.0 0.9	40.99 .16	54.6 0.9	57.19 .15	10.7 0.6
19.2	22.19 .12	7.7 0.6	17.74 .14	21.1 0.9	40.83 .15	53.7 1.0	57.05 .14	10.2 0.5
Mar. 1.1	22.08 .10	7.2 0.5	17.61 .12	20.1 0.9	40.69 .13	52.7 1.0	56.91 .12	9.7 0.4
11.1	21.98 .06	6.8 0.3	17.50 .09	19.2 0.9	40.57 .11	51.7 1.0	56.80 .10	9.3 0.3
21.1	21.92 .05	6.5 −0.2	17.42 .06	18.4 0.8	40.48 .07	50.8 0.9	56.71 .07	9.1 −0.2
31.1	21.89 −.01	6.5 0.0	17.38 −.02	17.6 0.6	40.43 −.03	49.9 0.8	56.65 −.03	9.0 0.0
April 10.0	21.90 +.03	6.6 +0.2	17.38 +.03	17.1 0.4	40.42 +.01	49.2 0.6	56.64 +.01	9.1 +0.2
20.0	21.95 .08	6.9 0.5	17.43 .07	16.7 −0.2	40.46 .06	48.7 0.4	56.67 .06	9.5 0.5
30.0	22.05 .12	7.6 0.7	17.53 .12	16.6 0.0	40.54 .11	48.4 −0.2	56.74 .10	10.1 0.7
May 9.9	22.20 .16	8.4 1.0	17.67 .17	16.7 +0.3	40.68 .16	48.3 +0.1	56.86 .14	10.9 0.9
19.9	22.38 .20	9.5 1.2	17.86 .21	17.2 0.6	40.86 .20	48.6 0.4	57.02 .18	11.9 1.1
29.9	22.61 .24	10.8 1.4	18.09 .25	17.9 0.8	41.08 .24	49.1 0.6	57.22 .22	13.1 1.3
June 8.9	22.86 .27	12.3 1.6	18.35 .28	18.8 1.1	41.34 .27	49.9 0.9	57.46 .26	14.6 1.5
18.8	23.14 .29	13.9 1.7	18.64 .30	20.0 1.3	41.63 .30	50.9 1.2	57.72 .27	16.1 1.6
28.8	23.43 .30	15.7 1.8	18.95 .31	21.5 1.5	41.93 .31	52.2 1.4	58.00 .29	17.8 1.7
July 8.8	23.74 .30	17.5 1.8	19.26 .32	23.0 1.6	42.25 .32	53.6 1.5	58.30 .30	19.6 1.8
18.8	24.04 .30	19.4 1.8	19.58 .32	24.7 1.7	42.58 .32	55.2 1.6	58.61 .30	21.3 1.7
28.7	24.34 .29	21.1 1.7	19.89 .31	26.5 1.8	42.89 .31	56.9 1.7	58.91 .30	23.1 1.7
Aug. 7.7	24.63 .28	22.9 1.6	20.19 .29	28.3 1.8	43.20 .30	58.7 1.8	59.20 .28	24.7 1.6
17.7	24.89 .26	24.4 1.5	20.47 .27	30.1 1.8	43.49 .28	60.5 1.8	59.47 .27	26.2 1.4
27.6	25.13 .23	25.9 1.3	20.73 .24	31.9 1.7	43.76 .26	62.2 1.7	59.73 .26	27.6 1.3
Sept. 6.6	25.35 .20	27.1 1.1	20.96 .21	33.5 1.6	44.00 .23	63.9 1.6	59.96 .22	28.7 1.1
16.6	25.53 .17	28.1 0.9	21.16 .18	35.0 1.5	44.22 .20	65.5 1.5	60.17 .19	29.7 0.8
26.6	25.63 .13	28.9 0.7	21.32 .15	36.4 1.3	44.40 .17	67.0 1.4	60.34 .16	30.4 0.6
Oct. 6.5	25.80 .10	29.4 0.5	21.46 .12	37.6 1.1	44.55 .13	68.3 1.2	60.49 .13	30.9 0.4
16.5	25.88 .07	29.8 0.3	21.56 .08	38.7 1.0	44.66 .10	69.4 1.1	60.60 .10	31.2 +0.2
26.5	25.94 .04	30.0 +0.1	21.63 .05	39.5 0.8	44.75 .07	70.4 0.9	60.69 .07	31.3 0.0
Nov. 5.5	25.97 +.01	29.9 −0.1	21.67 +.02	40.2 0.6	44.80 .04	71.3 0.7	60.74 .04	31.2 −0.1
15.4	25.97 −.01	29.7 0.3	21.68 −.01	40.7 0.4	44.83 +.01	71.9 0.6	60.77 +.01	31.0 0.3
25.4	25.94 .04	29.4 0.4	21.66 .03	41.1 +0.2	44.82 −.03	72.4 0.4	60.76 −.02	30.7 0.4
Dec. 5.4	25.89 .06	29.0 0.5	21.61 .06	41.2 0.0	44.78 .06	72.7 +0.2	60.73 .04	30.2 0.5
15.3	25.81 .09	28.5 0.5	21.54 .09	41.1 −0.1	44.71 .08	72.8 0.0	60.68 .07	29.7 0.6
25.3	25.72 .10	27.9 0.6	21.44 .11	40.9 0.3	44.62 .10	72.8 −0.2	60.60 .09	29.1 0.6
35.3	25.60 −.12	27.3 −0.7	21.32 −.13	40.6 −0.4	44.50 −.13	72.5 −0.4	60.49 −.12	28.5 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		ζ Arietis.		α Persei.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 36	° ′ 2 40	h m 2 55	° ′ 3 33	h m 3 7	° ′ 20 32	h m 3 14	° ′ 49 22
	s	″	s	″	s	″	s	″
Jan. 0.3	25.36 −.09	16.8 −0.8	20.53 −.08	50.3 −0.8	16.68 −.08	55.5 −0.2	52.21 −.14	69.2 +1.1
10.3	25.25 .12	16.1 0.7	20.43 .11	49.5 0.7	16.58 .11	55.3 0.2	52.05 .18	70.1 0.8
20.3	25.12 .14	15.3 0.7	20.31 .13	48.8 0.7	16.46 .14	55.1 0.3	51.85 .22	70.7 +0.4
30.3	24.98 .15	14.7 0.6	20.17 .15	48.2 0.6	16.31 .16	54.7 0.4	51.62 .25	71.0 0.0
Feb. 9.2	24.83 .15	14.2 0.5	20.01 .16	47.7 0.5	16.14 .17	54.2 0.5	51.35 .27	70.8 −0.3
19.2	24.67 .15	13.8 0.3	19.85 .16	47.3 0.4	15.97 .17	53.6 0.6	51.08 .27	70.3 0.7
Mar. 1.2	24.52 .14	13.5 0.2	19.69 .15	47.0 0.2	15.79 .17	53.0 0.6	50.81 .26	69.4 1.0
11.2	24.39 .12	13.4 −0.1	19.55 .14	46.8 −0.1	15.63 .15	52.3 0.6	50.56 .24	68.2 1.3
21.1	24.27 .10	13.4 +0.1	19.42 .11	46.8 +0.1	15.49 .13	51.7 0.6	50.33 .20	66.7 1.6
31.1	24.19 .06	13.6 0.3	19.33 .08	47.0 0.3	15.38 .09	51.1 0.6	50.15 .16	65.0 1.7
April 10.1	24.15 −.02	14.1 0.5	19.26 −.04	47.3 0.5	15.30 .05	50.6 0.5	50.03 .09	63.3 1.8
20.0	24.14 +.02	14.7 0.7	19.24 .00	47.9 0.7	15.27 −.01	50.2 0.3	49.96 −.03	61.5 1.8
30.0	24.18 .06	15.6 1.0	19.27 +.05	48.7 0.9	15.29 +.04	50.0 −0.1	49.97 +.04	59.7 1.7
May 10.0	24.27 .11	16.6 1.2	19.34 .09	49.7 1.1	15.35 .09	49.9 0.0	50.04 .10	58.0 1.6
20.0	24.40 .15	17.9 1.4	19.45 .13	50.8 1.3	15.47 .14	50.0 +0.2	50.17 .17	56.5 1.4
29.9	24.57 .19	19.3 1.5	19.60 .18	52.2 1.4	15.63 .18	50.4 0.5	50.38 .23	55.2 1.1
June 8.9	24.78 .22	20.9 1.6	19.80 .21	53.7 1.6	15.83 .22	51.0 0.7	50.64 .29	54.2 0.8
18.9	25.02 .25	22.6 1.7	20.03 .24	55.3 1.7	16.07 .25	51.8 0.9	50.96 .33	53.5 0.5
28.9	25.29 .27	24.4 1.8	20.29 .27	57.0 1.7	16.34 .28	52.7 1.0	51.31 .37	53.1 −0.2
July 8.8	25.57 .29	26.2 1.8	20.56 .28	58.8 1.7	16.63 .30	53.9 1.2	51.70 .40	53.1 +0.1
18.8	25.87 .30	28.0 1.7	20.85 .29	60.5 1.7	16.94 .31	55.1 1.3	52.11 .42	53.4 0.5
28.8	26.16 .29	29.6 1.6	21.15 .29	62.1 1.6	17.25 .31	56.4 1.4	52.53 .43	54.0 0.8
Aug. 7.7	26.46 .29	31.2 1.5	21.44 .29	63.6 1.4	17.56 .31	57.8 1.4	52.96 .43	54.9 1.0
17.7	26.74 .28	32.6 1.3	21.73 .28	65.0 1.3	17.87 .30	59.2 1.4	53.38 .42	56.1 1.3
27.7	27.01 .26	33.7 1.0	22.01 .27	66.2 1.0	18.16 .29	60.6 1.3	53.79 .40	57.5 1.5
Sept. 6.7	27.25 .24	34.6 0.8	22.26 .25	67.1 0.8	18.44 .27	61.8 1.2	54.18 .38	59.2 1.7
16.6	27.48 .21	35.3 0.5	22.50 .22	67.8 0.6	18.70 .26	63.0 1.1	54.55 .35	61.0 1.9
26.6	27.68 .18	35.7 +0.3	22.71 .20	68.2 0.3	18.94 .23	64.1 1.0	54.88 .32	62.9 2.0
Oct. 6.6	27.85 .15	35.9 0.0	22.90 .17	68.4 +0.1	19.15 .20	65.1 0.9	55.19 .29	65.0 2.1
16.6	27.99 .13	35.8 −0.2	23.06 .15	68.3 −0.2	19.34 .17	65.9 0.8	55.45 .26	67.1 2.2
26.5	28.10 .10	35.5 0.4	23.19 .12	68.0 0.4	19.49 .14	66.6 0.6	55.68 .20	69.3 2.2
Nov. 5.5	28.19 .07	35.0 0.6	23.29 .09	67.6 0.5	19.62 .11	67.1 0.5	55.86 .16	71.4 2.1
15.5	28.24 .04	34.4 0.7	23.37 .06	67.0 0.6	19.71 .08	67.5 0.4	55.99 .11	73.6 2.1
25.4	28.26 +.01	33.7 0.7	23.41 +.03	66.3 0.7	19.77 .05	67.9 0.3	56.08 +.06	75.6 2.0
Dec. 5.4	28.25 −.02	32.9 0.8	23.42 −.01	65.5 0.8	19.80 +.01	68.1 0.2	56.11 .00	77.4 1.8
15.4	28.22 .05	32.1 0.8	23.40 .04	64.7 0.8	19.80 −.03	68.2 +0.1	56.09 −.06	79.1 1.6
25.4	28.15 .08	31.3 0.8	23.34 .07	64.0 0.8	19.75 .06	68.2 −0.1	56.01 .10	80.6 1.3
35.3	28.06 −.10	30.6 −0.7	23.26 −.10	63.2 −0.7	19.67 −.09	68.1 −0.2	55.88 −.15	81.8 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Persei.				η Tauri.				ζ Persei.				γ¹ Eridani.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*	
	h m 3 33		° ′ 47 21		h m 3 39		° ′ 28 41		h m 3 45		° ′ 31 28		h m 3 51		° ′ 13 53	
	s		″		s		″		s		″		s		″	
Jan. 0.4	29.65	−.11	35.0	+1.2	36.14	−.06	25.2	+0.1	47.97	−.06	67.1	+0.5	50.44	−.07	33.5	+1.5
10.3	29.52	.16	36.0	0.8	36.06	.10	25.2	0.0	47.89	.10	67.4	0.3	50.35	.10	34.9	1.3
20.3	29.34	.20	36.7	0.5	35.95	.13	25.1	−0.2	47.77	.14	67.6	+0.1	50.24	.13	36.2	1.1
30.3	29.13	.23	37.1	+0.2	35.80	.16	24.9	0.3	47.61	.17	67.6	−0.1	50.10	.15	37.1	0.8
Feb. 9.3	28.88	.25	37.1	−0.2	35.63	.18	24.6	0.4	47.43	.19	67.5	0.3	49.93	.17	37.8	0.5
19.2	28.62	.26	36.7	0.5	35.45	.19	24.2	0.5	47.23	.20	67.2	0.4	49.75	.18	38.2	+0.3
Mar. 1.2	28.35	.26	36.0	0.8	35.26	.18	23.7	0.5	47.03	.20	66.6	0.6	49.57	.18	38.3	−0.1
11.2	28.10	.24	35.0	1.1	35.08	.17	23.1	0.6	46.83	.19	66.0	0.7	49.39	.18	38.1	0.4
21.2	27.87	.21	33.8	1.4	34.92	.15	22.5	0.6	46.65	.17	65.2	0.8	49.22	.16	37.6	0.6
31.1	27.68	.16	32.3	1.5	34.78	.12	21.8	0.6	46.49	.14	64.3	0.9	49.07	.13	36.8	0.9
April 10.1	27.54	.11	30.7	1.6	34.67	.08	21.2	0.6	46.38	.10	63.4	0.9	48.95	.10	35.8	1.2
20.1	27.46	−.05	29.0	1.7	34.61	−.04	20.7	0.5	46.30	−.05	62.4	0.9	48.87	.06	34.4	1.5
30.0	27.44	+.01	27.4	1.6	34.60	+.01	20.3	0.4	46.28	.00	61.6	0.8	48.83	−.02	32.8	1.7
May 10.0	27.48	.08	25.8	1.5	34.63	.06	20.0	−0.2	46.31	+.06	60.9	0.7	48.83	+.03	31.0	1.9
20.0	27.59	.14	24.4	1.3	34.72	.11	19.9	0.0	46.39	.11	60.3	0.5	48.88	.07	29.1	2.1
30.0	27.77	.20	23.1	1.1	34.85	.16	20.0	+0.2	46.53	.16	59.9	0.3	48.97	.12	26.9	2.2
June 8.9	28.00	.26	22.1	0.9	35.03	.20	20.2	0.4	46.71	.21	59.7	−0.1	49.11	.16	24.7	2.3
18.9	28.28	.31	21.4	0.6	35.24	.24	20.7	0.6	46.94	.25	59.7	+0.1	49.29	.19	22.4	2.3
28.9	28.61	.35	20.9	−0.3	35.50	.27	21.3	0.7	47.20	.28	59.9	0.3	49.50	.22	20.1	2.2
July 8.9	28.98	.38	20.8	0.0	35.78	.29	22.2	0.9	47.49	.30	60.4	0.5	49.74	.25	17.9	2.1
18.8	29.36	.40	20.9	+0.3	36.08	.30	23.1	1.0	47.81	.32	61.0	0.7	50.01	.27	15.8	2.0
28.8	29.77	.41	21.4	0.6	36.39	.31	24.2	1.1	48.14	.33	61.8	0.9	50.28	.28	13.9	1.8
Aug. 7.8	30.18	.41	22.1	0.8	36.70	.32	25.3	1.1	48.47	.34	62.7	1.0	50.57	.29	12.3	1.5
17.7	30.59	.41	23.1	1.1	37.02	.31	26.4	1.2	48.81	.33	63.7	1.1	50.86	.29	10.9	1.1
27.7	30.99	.40	24.3	1.3	37.33	.30	27.6	1.2	49.14	.33	64.9	1.2	51.15	.28	10.0	0.8
Sept. 6.7	31.38	.38	25.7	1.5	37.63	.29	28.8	1.1	49.46	.32	66.0	1.2	51.43	.27	9.4	−0.4
16.7	31.75	.36	27.3	1.7	37.91	.27	29.9	1.1	49.77	.30	67.2	1.2	51.69	.26	9.2	0.0
26.6	32.09	.33	29.0	1.8	38.18	.25	30.9	1.0	50.06	.28	68.4	1.2	51.94	.24	9.4	+0.4
Oct. 6.6	32.41	.30	30.9	1.9	38.42	.23	31.8	0.9	50.32	.25	69.6	1.2	52.17	.22	10.0	0.8
16.6	32.69	.26	32.7	1.9	38.64	.21	32.6	0.8	50.56	.23	70.7	1.1	52.37	.19	11.0	1.1
26.6	32.93	.22	34.7	2.0	38.83	.18	33.3	0.7	50.78	.20	71.9	1.1	52.55	.17	12.2	1.4
Nov. 5.5	33.14	.18	36.7	2.0	39.00	.15	34.0	0.6	50.96	.16	72.9	1.0	52.70	.14	13.8	1.6
15.5	33.30	.13	38.6	1.9	39.13	.12	34.5	0.5	51.11	.13	73.9	1.0	52.82	.10	15.4	1.7
25.5	33.41	.09	40.5	1.8	39.23	.08	35.0	0.4	51.22	.10	74.8	0.9	52.91	.07	17.3	1.8
Dec. 5.4	33.47	+.04	42.3	1.7	39.29	.04	35.3	0.3	51.29	.05	75.7	0.8	52.96	+.03	19.1	1.8
15.4	33.48	−.02	43.9	1.5	39.31	+.01	35.6	0.2	51.32	−.01	76.4	0.7	52.97	−.01	20.9	1.8
25.4	33.43	.07	45.3	1.3	39.30	−.03	35.8	0.2	51.31	+.03	77.0	0.6	52.95	.04	22.6	1.6
35.4	33.33	−.12	46.6	+1.1	39.24	−.07	35.9	+0.1	51.25	+.07	77.6	+0.5	52.89	−.08	24.2	+1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Tauri.		ε Tauri.		α Tauri. (*Aldebaran.*)		ι Aurigæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 12	° ′ 15 18	h m 4 20	° ′ 18 52	h m 4 28	° ′ 16 14	h m 4 48	° ′ 32 56
	s	″	s	″	s	″	s	″
Jan. 0.4	14.81 −.01	6.6 −0.3	52.43 −.02	50.7 −0.1	18.74 −.02	14.6 −0.3	21.67 .00	62.7 +0.7
10.4	14.76 .07	6.3 0.3	52.39 .06	50.5 0.1	18.70 .06	14.3 0.3	21.65 −.05	63.4 0.6
20.4	14.67 .11	6.0 0.3	52.30 .10	50.4 0.2	18.62 .10	14.0 0.3	21.57 .10	63.9 0.4
30.3	14.55 .11	5.7 0.3	52.18 .13	50.2 0.2	18.50 .13	13.8 0.3	21.45 .14	64.3 0.3
Feb. 9.3	14.40 .16	5.3 0.3	52.03 .16	49.9 0.2	18.36 .16	13.5 0.3	21.29 .16	64.6 +0.2
19.3	14.22 .18	5.0 0.3	51.86 .18	49.7 0.3	18.19 .18	13.2 0.3	21.10 .20	64.7 0.0
Mar. 1.2	14.04 .18	4.7 0.3	51.67 .19	49.4 0.3	18.01 .18	12.9 0.3	20.89 .21	64.6 −0.2
11.2	13.86 .18	4.3 0.3	51.49 .18	49.0 0.3	17.82 .18	12.6 0.3	20.68 .21	64.3 0.3
21.2	13.69 .16	4.1 0.3	51.31 .17	48.7 0.3	17.64 .17	12.4 0.3	20.47 .20	63.9 0.5
31.2	13.54 .14	3.8 0.2	51.15 .14	48.4 0.3	17.48 .15	12.1 0.2	20.27 .18	63.4 0.6
April 10.1	13.42 .10	3.7 −0.1	51.02 .11	48.1 0.3	17.35 .12	11.9 0.2	20.10 .15	62.7 0.7
20.1	13.33 .06	3.6 0.0	50.92 .07	47.8 0.2	17.25 .08	11.8 −0.1	19.97 .11	61.9 0.8
30.1	13.29 −.02	3.6 +0.1	50.87 −.03	47.7 −0.1	17.19 −.04	11.8 +0.1	19.89 .06	61.2 0.8
May 10.1	13.29 +.02	3.8 0.2	50.87 +.02	47.7 0.0	17.18 +.01	11.9 0.2	19.85 −.01	60.4 0.7
20.0	13.34 .07	4.1 0.4	50.91 .07	47.8 +0.2	17.21 .06	12.2 0.3	19.87 +.04	59.7 0.7
30.0	13.43 .12	4.6 0.6	51.00 .11	48.0 0.3	17.29 .10	12.6 0.5	19.94 .09	59.1 0.6
June 9.0	13.57 .16	5.2 0.7	51.13 .16	48.4 0.5	17.42 .15	13.1 0.6	20.06 .14	58.6 0.4
18.9	13.75 .20	6.0 0.8	51.31 .19	49.0 0.6	17.58 .18	13.8 0.7	20.23 .19	58.2 0.3
28.9	13.96 .23	6.9 0.9	51.52 .23	49.7 0.7	17.79 .22	14.6 0.8	20.44 .23	58.0 −0.2
July 8.9	14.21 .26	7.9 1.0	51.77 .26	50.5 0.8	18.02 .26	15.5 0.9	20.69 .26	57.9 0.0
18.9	14.48 .28	9.0 1.1	52.03 .28	51.3 0.9	18.28 .27	16.4 1.0	20.97 .29	58.0 +0.2
28.8	14.76 .29	10.1 1.1	52.32 .29	52.3 1.0	18.56 .28	17.4 1.0	21.27 .31	58.2 0.3
Aug. 7.8	15.06 .30	11.2 1.1	52.62 .30	53.3 1.0	18.85 .29	18.4 1.0	21.59 .33	58.6 0.4
17.8	15.36 .30	12.3 1.0	52.92 .30	54.2 0.9	19.15 .30	19.3 0.9	21.92 .34	59.0 0.5
27.8	15.66 .29	13.3 0.9	53.22 .30	55.1 0.9	19.45 .30	20.2 0.8	22.26 .34	59.6 0.6
Sept. 6.7	15.95 .29	14.2 0.8	53.52 .29	56.0 0.8	19.74 .29	21.0 0.7	22.60 .34	60.2 0.7
16.7	16.23 .28	14.9 0.7	53.81 .28	56.7 0.7	20.03 .28	21.7 0.6	22.93 .33	60.8 0.7
26.7	16.50 .26	15.5 0.6	54.09 .27	57.4 0.6	20.31 .27	22.2 0.5	23.25 .32	61.5 0.7
Oct. 6.6	16.75 .24	15.9 0.4	54.35 .25	57.9 0.5	20.57 .25	22.6 0.3	23.57 .30	62.3 0.7
16.6	16.98 .22	16.2 0.2	54.60 .23	58.3 0.3	20.82 .24	22.9 0.2	23.86 .28	63.0 0.7
26.6	17.20 .20	16.4 +0.1	54.82 .21	58.6 0.2	21.04 .21	23.0 +0.1	24.14 .26	63.7 0.8
Nov. 5.6	17.38 .17	16.4 0.0	55.02 .19	58.8 0.1	21.24 .19	23.0 0.0	24.39 .24	64.5 0.8
15.5	17.54 .14	16.3 −0.1	55.19 .16	58.9 +0.1	21.42 .16	22.9 −0.1	24.61 .20	65.3 0.8
25.5	17.67 .11	16.2 0.2	55.33 .12	58.9 0.0	21.56 .13	22.8 0.2	24.80 .17	66.1 0.8
Dec. 5.5	17.76 .07	16.0 0.2	55.43 .08	58.9 0.0	21.67 .09	22.6 0.2	24.95 .13	66.9 0.8
15.5	17.81 +.01	15.7 0.3	55.50 +.04	58.8 −0.1	21.74 .05	22.3 0.2	25.05 .08	67.6 0.8
25.4	17.83 .00	15.4 0.3	55.52 .00	58.8 0.1	21.77 +.01	22.1 0.2	25.11 +.03	68.4 0.7
35.4	17.80 −.05	15.1 −0.3	55.51 −.04	58.7 −0.1	21.76 −.03	21.9 −0.3	25.11 −.02	69.1 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Orionis.				α Aurigæ. (*Capella.*)				β Orionis. (*Rigel.*)				β Tauri.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	$4^{h}\ 56^{m}$		$15^{\circ}\ 12'$		$5^{h}\ 6^{m}$		$45^{\circ}\ 51'$		$5^{h}\ 8^{m}$		$8^{\circ}\ 21'$		$5^{h}\ 17^{m}$		$28^{\circ}\ 29'$	
	s		″				″		s		″		s		″	
Jan. 0.4	59.60	·00	49.5	−0·3	53.99	+·01	27.9	+1·4	10.04	+·01	40.2	+1·6	54.65	+·03	22.7	+0·4
10.4	59.59	−·04	49.2	0·3	53.98	−·05	29.3	1·3	10.03	−·04	41.7	1·5	54.65	−·02	23.1	0·4
20.4	59.53	·08	48.9	0·3	53.90	·11	30.5	1·1	9.97	·08	43.1	1·3	54.61	·07	23.5	0·4
30.4	59.43	·12	48.6	0·3	53.76	·16	31.5	0·9	9.87	·12	44.3	1·0	54.52	·11	23.8	0·3
Feb. 9.3	59.30	·15	48.4	0·2	53.57	·21	32.3	0·6	9.73	·15	45.2	0·8	54.38	·15	24.1	0·2
19.3	59.14	·17	48.1	0·2	53.34	·24	32.8	0·4	9.57	·17	45.9	0·6	54.21	·18	24.2	+0·1
Mar. 1.3	58.96	·18	47.9	0·2	53.09	·26	33.0	+0·1	9.39	·18	46.3	+0·3	54.02	·20	24.3	0·0
11.2	58.77	·19	47.7	0·2	52.82	·27	32.9	−0·2	9.20	·19	46.5	0·0	53.82	·21	24.2	−0·1
21.2	58.59	·18	47.6	0·2	52.56	·26	32.5	0·5	9.01	·19	46.4	−0·2	53.61	·20	24.0	0·3
31.2	58.41	·16	47.4	0·1	52.31	·23	31.9	0·8	8.83	·17	46.0	0·5	53.41	·19	23.7	0·4
April 10.2	58.26	·13	47.3	−0·1	52.09	·20	31.0	1·0	8.67	·15	45.4	0·7	53.23	·16	23.3	0·4
20.1	58.14	·10	47.3	0·0	51.91	·15	29.8	1·2	8.54	·12	44.6	1·0	53.09	·12	22.9	0·5
30.1	58.06	·06	47.4	+0·1	51.78	·10	28.6	1·3	8.44	·08	43.5	1·2	52.99	·08	22.4	0·5
May 10.1	58.02	−·02	47.6	0·2	51.71	−·04	27.2	1·4	8.38	−·04	42.2	1·4	52.93	−·04	21.9	0·5
20.1	58.03	+·03	47.8	0·3	51.70	+·02	25.8	1·4	8.36	+·01	40.7	1·6	52.91	+·01	21.4	0·4
30.0	58.08	·06	48.2	0·4	51.75	·08	24.5	1·3	8.39	·05	39.1	1·7	52.95	·06	21.0	0·4
June 9.0	58.18	·12	48.7	0·6	51.87	·14	23.2	1·2	8.46	·09	37.3	1·9	53.04	·11	20.7	0·3
19.0	58.32	·16	49.4	0·7	52.04	·20	22.0	1·1	8.57	·13	35.4	1·9	53.17	·15	20.5	0·2
28.9	58.50	·20	50.1	0·8	52.26	·25	21.0	0·9	8.72	·17	33.5	1·9	53.34	·19	20.4	−0·1
July 8.9	58.71	·22	50.9	0·8	52.53	·29	20.1	0·8	8.90	·20	31.5	1·9	53.56	·23	20.4	0·0
18.9	58.95	·25	51.8	0·9	52.84	·33	19.4	0·6	9.12	·22	29.6	1·8	53.80	·26	20.5	+0·1
28.9	59.21	·27	52.7	0·9	53.18	·35	18.9	0·4	9.35	·24	27.9	1·7	54.07	·28	20.7	0·2
Aug. 7.8	59.49	·28	53.6	0·8	53.55	·37	18.7	−0·2	9.61	·26	26.3	1·5	54.37	·30	20.9	0·3
17.8	59.77	·29	54.4	0·8	53.93	·39	18.6	0·0	9.88	·27	24.9	1·2	54.67	·31	21.3	0·3
27.8	60.07	·29	55.1	0·7	54.33	·40	18.7	+0·2	10.15	·28	23.8	0·9	54.99	·32	21.6	0·4
Sept. 6.8	60.36	·29	55.8	0·6	54.73	·40	19.0	0·4	10.43	·28	23.1	0·6	55.31	·32	22.0	0·4
16.7	60.65	·29	56.3	0·5	55.13	·40	19.5	0·6	10.71	·28	22.7	−0·2	55.63	·32	22.4	0·4
26.7	60.94	·28	56.7	0·3	55.52	·39	20.1	0·7	10.98	·27	22.7	+0·2	55.95	·32	22.8	0·4
Oct. 6.7	61.22	·27	56.9	+0·1	55.90	·37	20.9	0·9	11.25	·26	23.0	0·5	56.27	·31	23.1	0·4
16.6	61.48	·25	57.0	0·0	56.27	·36	21.9	1·0	11.50	·24	23.7	0·9	56.57	·29	23.5	0·3
26.6	61.72	·23	56.9	−0·1	56.62	·33	23.0	1·1	11.74	·23	24.8	1·2	56.85	·28	23.8	0·3
Nov. 5.6	61.95	·21	56.8	0·2	56.93	·30	24.2	1·3	11.96	·21	26.1	1·4	57.12	·25	24.2	0·3
15.6	62.15	·19	56.6	0·3	57.22	·26	25.5	1·4	12.15	·18	27.6	1·6	57.36	·23	24.5	0·4
25.5	62.32	·15	56.3	0·3	57.46	·22	26.9	1·4	12.31	·15	29.3	1·7	57.57	·19	24.9	0·4
Dec. 5.5	62.46	·12	56.0	0·3	57.65	·17	28.3	1·5	12.44	·11	31.0	1·8	57.75	·15	25.3	0·4
15.5	62.56	·08	55.7	0·4	57.80	·11	29.8	1·5	12.53	·07	32.8	1·8	57.88	·11	25.7	0·4
25.5	62.61	+·04	55.3	0·3	57.88	+·05	31.3	1·5	12.59	+·03	34.5	1·7	57.96	·06	26.2	0·4
35.4	62.63	−·01	55.0	−0·3	57.90	−·01	32.8	+1·4	12.59	−·01	36.1	+1·5	58.00	+·01	26.6	+0·4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 25	° ′ 0 23	h m 5 26	° ′ 17 55	h m 5 29	° ′ 1 17	h m 5 34	° ′ 34 8
	s	″	s	″	s	″	s	″
Jan. 0.4	14.05 +.03	72.8 +1.3	53.26 +.01	24.2 +2.1	29.21 +.03	33.8 +1.3	51.62 −.01	60.8 +2.8
10.4	14.06 −.02	74.1 1.1	53.24 −.04	26.2 1.9	29.22 −.02	35.0 1.2	51.58 .06	63.5 2.6
20.4	14.02 .06	75.1 1.0	53.19 .08	28.1 1.7	29.18 .06	36.2 1.1	51.50 .11	65.9 2.3
30.4	13.93 .10	76.1 0.8	53.08 .12	29.7 1.4	29.10 .10	37.1 0.9	51.37 .15	68.0 1.9
Feb. 9.3	13.81 .13	76.8 0.6	52.95 .15	30.9 1.1	28.98 .13	37.9 0.7	51.19 .19	69.7 1.5
19.3	13.67 .16	77.4 0.5	52.78 .18	31.9 0.8	28.83 .16	38.5 0.5	50.98 .22	71.0 1.0
Mar. 1.3	13.49 .18	77.7 0.3	52.59 .20	32.5 0.4	28.66 .18	38.9 0.3	50.75 .24	71.8 0.6
11.3	13.31 .19	77.9 +0.1	52.38 .20	32.7 +0.1	28.47 .19	39.1 +0.1	50.51 .25	72.2 +0.1
21.2	13.12 .18	77.9 −0.1	52.18 .20	32.7 −0.2	28.29 .18	39.1 −0.1	50.26 .25	72.1 −0.3
31.2	12.94 .17	77.8 0.3	51.98 .19	32.3 0.6	28.10 .17	39.0 0.3	50.01 .24	71.6 0.7
April 10.2	12.78 .15	77.4 0.4	51.80 .17	31.5 0.9	27.94 .15	38.6 0.5	49.79 .21	70.6 1.2
20.1	12.64 .12	76.9 0.6	51.65 .14	30.5 1.2	27.80 .12	38.0 0.6	49.59 .18	69.3 1.6
30.1	12.54 .08	76.2 0.8	51.52 .10	29.1 1.5	27.70 .09	37.3 0.8	49.42 .14	67.5 1.9
May 10.1	12.48 −.04	75.3 1.0	51.44 .06	27.5 1.7	27.63 .05	36.4 1.0	49.30 .10	65.5 2.2
20.1	12.45 .00	74.2 1.1	51.40 −.02	25.7 1.9	27.60 −.01	35.3 1.2	49.22 .06	63.1 2.5
30.0	12.47 +.04	73.0 1.3	51.40 +.02	23.7 2.1	27.61 +.03	34.0 1.3	49.18 −.01	60.5 2.7
June 9.0	12.53 .08	71.7 1.4	51.44 .07	21.5 2.2	27.67 .06	32.7 1.4	49.20 +.04	57.7 2.8
19.0	12.63 .12	70.3 1.5	51.53 .11	19.2 2.3	27.77 .12	31.2 1.5	49.26 .09	54.8 2.9
29.0	12.77 .16	68.8 1.5	51.66 .14	16.8 2.3	27.90 .15	29.7 1.6	49.37 .13	51.9 2.9
July 8.9	12.94 .19	67.3 1.5	51.82 .18	14.5 2.3	28.07 .19	28.1 1.5	49.52 .17	49.0 2.8
18.9	13.15 .22	65.8 1.5	52.01 .21	12.2 2.2	28.27 .21	26.6 1.5	49.72 .21	46.2 2.7
28.9	13.38 .24	64.3 1.4	52.24 .23	10.1 2.0	28.49 .23	25.1 1.4	49.94 .24	43.6 2.4
Aug. 7.8	13.62 .25	63.0 1.2	52.48 .25	8.3 1.7	28.74 .25	23.8 1.3	50.20 .27	41.3 2.1
17.8	13.88 .27	61.9 1.0	52.74 .27	6.7 1.4	29.00 .26	22.6 1.1	50.47 .29	39.4 1.7
27.8	14.16 .28	60.9 0.8	53.02 .28	5.4 1.0	29.26 .27	21.7 0.8	50.77 .30	37.9 1.2
Sept. 6.8	14.43 .28	60.3 0.5	53.30 .28	4.6 0.6	29.54 .28	21.0 0.5	51.07 .31	36.9 0.7
16.7	14.71 .28	59.9 −0.2	53.59 .28	4.2 −0.2	29.82 .28	20.6 −0.2	51.39 .31	36.4 −0.2
26.7	14.99 .27	59.8 +0.1	53.87 .28	4.2 +0.3	30.10 .27	20.5 +0.1	51.70 .31	36.5 +0.4
Oct. 6.7	15.26 .27	60.0 0.4	54.15 .27	4.7 0.7	30.37 .27	20.7 0.4	52.01 .30	37.2 0.8
16.7	15.53 .26	60.5 0.6	54.41 .26	5.6 1.1	30.64 .26	21.3 0.7	52.31 .29	38.4 1.3
26.6	15.78 .24	61.2 0.9	54.67 .24	7.0 1.5	30.89 .24	22.0 0.9	52.58 .27	40.1 1.9
Nov. 5.6	16.01 .22	62.2 1.1	54.90 .22	8.6 1.8	31.12 .22	23.1 1.1	52.83 .24	42.2 2.3
15.6	16.22 .20	63.4 1.2	55.10 .19	10.6 2.1	31.34 .20	24.3 1.3	53.06 .21	44.8 2.6
25.5	16.40 .17	64.7 1.3	55.28 .16	12.7 2.2	31.52 .17	25.7 1.4	53.25 .17	47.5 2.9
Dec. 5.5	16.55 .13	66.0 1.4	55.42 .12	15.0 2.3	31.68 .14	27.1 1.4	53.39 .12	50.5 3.0
15.5	16.67 .09	67.4 1.4	55.52 .08	17.3 2.3	31.80 .10	28.5 1.4	53.49 .07	53.5 3.0
25.5	16.74 .05	68.8 1.3	55.58 +.04	19.6 2.2	31.87 .06	29.9 1.4	53.54 +.02	56.4 2.9
35.4	16.77 +.01	70.0 +1.2	55.60 .00	21.7 +2.1	31.91 +.01	31.3 +1.3	53.54 −.03	59.2 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.				μ Geminorum.				α Argus. (*Canopus*)				γ Geminorum.			
	Right Ascension.		Declination *North*.		Right Ascension.		Declination *North*.		Right Ascension.		Declination *South*.		Right Ascension.		Declination *North*.	
	h m 5 47		° ′ 7 22		h m 6 14		° ′ 22 34		h m 6 20		° ′ 52 37		h m 6 30		° ′ 16 30	
	s		″		s		″		s		″		s		″	
Jan. 0.5	59.65	+.06	35.0	−0.9	56.29	+.09	32.5	0.0	62.39	.00	38.4	+3.5	3.08	+.10	24.7	−0.4
10.5	59.68	+.01	34.2	0.8	56.35	+.04	32.5	+0.1	62.36	−.07	41.8	3.3	3.15	+.05	24.3	0.3
20.4	59.66	−.04	33.5	0.7	56.36	−.01	32.6	0.1	62.26	.14	45.0	3.0	3.18	.00	24.1	0.2
30.4	59.60	.06	32.8	0.5	56.32	.06	32.8	0.2	62.09	.20	47.8	2.6	3.15	−.05	23.9	0.1
Feb. 9.4	59.50	.12	32.4	0.4	56.24	.11	33.0	0.2	61.86	.25	50.3	2.2	3.08	.09	23.8	−0.1
19.3	59.36	.15	32.0	0.3	56.11	.15	33.2	0.2	61.58	.30	52.3	1.8	2.97	.13	23.8	0.0
Mar. 1.3	59.20	.17	31.7	0.2	55.95	.17	33.3	0.2	61.26	.33	53.8	1.3	2.82	.16	23.8	+0.1
11.3	59.02	.18	31.6	−0.1	55.76	.19	33.5	0.1	60.92	.35	54.8	0.8	2.65	.18	23.9	0.1
21.3	58.83	.18	31.6	0.0	55.57	.20	33.6	+0.1	60.55	.36	55.3	+0.2	2.46	.19	24.0	0.1
31.2	58.65	.17	31.6	+0.1	55.37	.19	33.6	0.0	60.19	.36	55.3	−0.3	2.27	.18	24.1	0.1
April 10.2	58.48	.16	31.8	0.2	55.18	.18	33.6	0.0	59.83	.34	54.7	0.8	2.09	.17	24.2	0.1
20.2	58.33	.13	32.1	0.3	55.02	.15	33.6	−0.1	59.50	.31	53.7	1.3	1.92	.15	24.3	0.1
30.2	58.22	.10	32.5	0.4	54.88	.12	33.5	0.1	59.20	.28	52.2	1.8	1.78	.12	24.5	0.2
May 10.1	58.14	.06	33.0	0.6	54.78	.08	33.4	0.1	58.95	.23	50.2	2.2	1.68	.09	24.6	0.2
20.1	58.10	−.02	33.6	0.7	54.72	−.04	33.3	0.1	58.74	.16	47.9	2.5	1.61	.05	24.8	0.2
30.1	58.10	+.02	34.3	0.8	54.71	+.01	33.2	−0.1	58.59	.12	45.2	2.8	1.58	−.01	25.0	0.2
June 9.0	58.15	.07	35.2	0.9	54.74	.05	33.1	0.0	58.49	−.06	42.2	3.0	1.59	+.03	25.3	0.3
19.0	58.23	.11	36.1	1.0	54.81	.09	33.1	0.0	58.46	.00	39.1	3.2	1.65	.07	25.6	0.3
29.0	58.36	.14	37.1	1.0	54.92	.13	33.2	+0.1	58.49	+.06	35.8	3.3	1.74	.11	26.0	0.4
July 9.0	58.52	.17	38.2	1.0	55.07	.17	33.3	0.1	58.58	.12	32.5	3.3	1.87	.15	26.4	0.4
18.9	58.71	.20	39.2	1.0	55.26	.20	33.4	0.1	58.72	.17	29.3	3.2	2.03	.18	26.8	0.4
28.9	58.93	.23	40.3	1.0	55.47	.23	33.5	0.2	58.93	.23	26.2	3.0	2.22	.21	27.2	0.4
Aug. 7.9	59.17	.25	41.2	0.9	55.71	.25	33.7	0.2	59.18	.27	23.4	2.6	2.45	.23	27.6	0.3
17.9	59.42	.26	42.1	0.8	55.97	.27	33.8	0.1	59.47	.31	21.0	2.2	2.69	.25	27.9	0.3
27.8	59.69	.27	42.8	0.6	56.25	.29	33.9	+0.1	59.81	.35	18.9	1.8	2.95	.27	28.1	0.2
Sept. 6.8	59.97	.28	43.3	0.4	56.54	.30	34.0	0.0	60.17	.38	17.4	1.2	3.22	.28	28.2	+0.1
16.8	60.25	.28	43.6	+0.2	56.84	.30	34.0	−0.1	60.56	.39	16.5	−0.6	3.50	.29	28.2	−0.1
26.7	60.54	.28	43.7	0.0	57.15	.31	33.9	0.1	60.96	.40	16.2	0.0	3.80	.30	28.1	0.2
Oct. 6.7	60.82	.28	43.6	−0.2	57.46	.31	33.7	0.2	61.36	.40	16.5	+0.6	4.10	.30	27.8	0.3
16.7	61.10	.27	43.2	0.5	57.77	.30	33.5	0.2	61.76	.39	17.5	1.3	4.40	.30	27.4	0.5
26.7	61.36	.26	42.6	0.6	58.07	.30	33.2	0.3	62.14	.37	19.0	1.9	4.69	.29	26.9	0.6
Nov. 5.6	61.62	.24	41.9	0.8	58.36	.28	32.9	0.3	62.50	.34	21.2	2.4	4.98	.28	26.3	0.6
15.6	61.85	.22	41.0	0.9	58.64	.26	32.7	0.3	62.82	.30	23.8	2.8	5.26	.26	25.7	0.7
25.6	62.06	.19	40.1	1.0	58.89	.24	32.4	0.3	63.09	.25	26.8	3.2	5.51	.24	25.0	0.7
Dec. 5.6	62.24	.16	39.1	1.0	59.11	.20	32.1	0.2	63.31	.19	30.2	3.4	5.74	.21	24.4	0.6
15.5	62.38	.12	38.1	1.0	59.30	.16	32.0	0.1	63.46	.12	33.6	3.5	5.93	.17	23.8	0.6
25.5	62.48	.08	37.2	0.9	59.44	.12	31.9	−0.1	63.55	+.05	37.2	3.5	6.08	.13	23.3	0.5
35.5	62.54	+.04	36.3	−0.8	59.54	+.07	31.9	0.0	63.56	−.02	40.6	+3.4	6.19	+.06	22.9	−0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Majoris. (*Sirius.*)				ε Canis Majoris.				δ Canis Majoris.				δ Geminorum.			
	Right Ascension.		Declination *South.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	$6^{h}\ 39^{m}$		$16^{\circ}\ 32'$		$6^{h}\ 53^{m}$		$28^{\circ}\ 47'$		$7^{h}\ 2^{m}$		$26^{\circ}\ 10'$		$7^{h}\ 12^{m}$		$22^{\circ}\ 13'$	
	s		″		s		″		s		″		s		″	
Jan. 0.5	18.62	+.08	19.5	+2.4	25.63	+.09	46.5	+2.9	60.65	+.10	71.7	+2.8	12.06	+.14	15.5	−0.2
10.5	18.63	+.03	21.8	2.2	25.69	+.03	49.4	2.8	60.73	+.05	74.5	2.7	12.18	.10	15.3	−0.1
20.5	18.69	−.02	24.0	2.0	25.69	−.02	52.1	2.6	60.75	−.01	77.1	2.5	12.25	+.04	15.4	+0.1
30.4	18.64	.07	25.9	1.8	25.65	.07	54.6	2.3	60.72	.06	79.5	2.3	12.26	−.01	15.5	0.2
Feb. 9.4	18.56	.11	27.5	1.5	25.55	.12	56.7	2.0	60.64	.10	81.6	2.0	12.23	.06	15.8	0.3
19.4	18.43	.14	28.9	1.2	25.41	.16	58.5	1.6	60.51	.14	83.4	1.6	12.14	.10	16.1	0.3
Mar. 1.3	18.27	.17	29.9	0.9	25.24	.19	60.0	1.2	60.35	.18	84.8	1.2	12.02	.14	16.4	0.4
11.3	18.09	.19	30.6	0.5	25.03	.21	61.0	0.8	60.15	.20	85.9	0.9	11.86	.17	16.8	0.4
21.3	17.89	.20	31.0	+0.2	24.81	.22	61.6	+0.4	59.95	.21	86.5	0.5	11.68	.19	17.1	0.3
31.3	17.69	.20	31.1	−0.1	24.59	.23	61.8	0.0	59.73	.22	86.8	+0.1	11.49	.19	17.4	0.3
April 10.2	17.49	.19	30.8	0.4	24.36	.22	61.6	−0.4	59.51	.21	86.7	−0.3	11.29	.18	17.7	0.2
20.2	17.31	.17	30.2	0.7	24.15	.20	61.0	0.8	59.30	.19	86.1	0.7	11.12	.17	17.8	0.2
30.2	17.15	.14	29.3	1.0	23.96	.18	60.0	1.2	59.12	.17	85.3	1.1	10.96	.15	18.0	0.1
May 10.2	17.02	.11	28.2	1.3	23.80	.14	58.7	1.5	58.96	.14	84.0	1.4	10.82	.12	18.1	+0.1
20.1	16.92	.08	26.8	1.5	23.67	.11	57.0	1.8	58.83	.11	82.5	1.7	10.72	.08	18.1	0.0
30.1	16.86	−.04	25.1	1.7	23.58	.07	55.1	2.1	58.74	.07	80.7	2.0	10.66	−.04	18.1	0.0
June 9.1	16.84	.00	23.3	1.9	23.53	−.03	52.9	2.3	58.69	−.03	78.6	2.2	10.64	.00	18.0	0.0
19.0	16.86	+.04	21.4	2.0	23.52	+.01	50.4	2.5	58.67	+.01	76.3	2.3	10.66	+.04	18.0	0.0
29.0	16.92	.08	19.3	2.1	23.55	.06	47.9	2.6	58.70	.05	73.9	2.4	10.71	.08	18.0	−0.1
July 9.0	17.02	.11	17.2	2.1	23.62	.09	45.3	2.6	58.76	.08	71.4	2.5	10.81	.11	17.9	0.1
19.0	17.15	.15	15.1	2.0	23.73	.13	42.7	2.5	58.87	.12	68.9	2.4	10.94	.15	17.8	0.1
28.9	17.31	.18	13.1	1.9	23.88	.16	40.2	2.4	59.01	.16	66.5	2.3	11.10	.18	17.7	0.1
Aug. 7.9	17.50	.20	11.3	1.7	24.06	.19	37.9	2.2	59.18	.19	64.3	2.1	11.29	.20	17.6	0.1
17.9	17.71	.22	9.7	1.5	24.27	.22	35.8	1.9	59.38	.22	62.3	1.9	11.50	.23	17.4	0.2
27.9	17.95	.24	8.4	1.1	24.51	.25	34.0	1.6	59.60	.24	60.6	1.5	11.74	.25	17.2	0.3
Sept. 6.8	18.20	.26	7.4	0.8	24.77	.27	32.7	1.1	59.85	.26	59.2	1.1	12.01	.27	16.9	0.3
16.8	18.47	.27	6.8	−0.4	25.05	.29	31.8	0.6	60.12	.28	58.3	0.6	12.28	.29	16.5	0.4
26.8	18.75	.28	6.7	+0.1	25.34	.30	31.4	−0.1	60.41	.29	57.9	−0.1	12.58	.30	16.0	0.5
Oct. 6.7	19.03	.29	7.0	0.5	25.64	.31	31.5	+0.4	60.71	.30	58.0	+0.4	12.88	.31	15.4	0.6
16.7	19.32	.29	7.7	0.9	25.95	.31	32.2	0.9	61.01	.30	58.7	0.9	13.20	.31	14.8	0.7
26.7	19.60	.28	8.8	1.3	26.26	.30	33.4	1.4	61.31	.30	59.8	1.4	13.51	.32	14.1	0.7
Nov. 5.7	19.88	.27	10.4	1.7	26.55	.29	35.1	1.9	61.61	.29	61.4	1.8	13.83	.31	13.4	0.7
15.6	20.14	.25	12.3	2.0	26.83	.27	37.2	2.3	61.89	.27	63.4	2.2	14.14	.30	12.7	0.7
25.6	20.38	.22	14.4	2.2	27.09	.24	39.6	2.6	62.15	.25	65.8	2.5	14.43	.28	12.1	0.6
Dec. 5.6	20.59	.19	16.7	2.4	27.31	.21	42.3	2.8	62.38	.22	68.4	2.7	14.70	.25	11.5	0.5
15.6	20.76	.15	19.2	2.4	27.50	.17	45.2	2.9	62.58	.18	71.2	2.8	14.94	.22	11.1	0.4
25.5	20.89	.11	21.6	2.4	27.64	.12	48.1	2.9	62.73	.13	74.0	2.8	15.14	.18	10.7	0.3
35.5	20.98	+.07	23.9	+2.3	27.74	+.07	51.1	+2.8	62.84	+.09	76.8	+2.8	15.29	+.13	10.5	−0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)		β Geminorum. (*Pollux.*)		φ Geminorum.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 26	° ′ 32 10	h m 7 32	° ′ 5 33	h m 7 37	° ′ 28 20	h m 7 45	° ′ 27 6
	s	″	s	″	s	″	s	″
Jan. 0.5	7.73 +.17	24.9 +0.4	21.67 +.15	37.4 −1.3	11.79 +.16	28.2 +0.1	22.59 +.19	12.4 0.0
10.5	7.87 .13	25.4 0.6	21.80 .10	36.1 1.2	11.94 .13	28.4 0.3	22.75 .14	12.5 +0.2
20.5	7.96 +.06	26.0 0.7	21.88 +.05	35.1 1.0	12.04 .07	28.7 0.4	22.86 .08	12.8 0.3
30.5	8.00 .00	26.7 0.8	21.91 .00	34.1 0.8	12.08 +.01	29.2 0.5	22.91 +.02	13.2 0.5
Feb. 9.4	7.97 −.05	27.5 0.8	21.88 −.05	33.4 0.6	12.06 −.04	29.8 0.6	22.91 −.03	13.7 0.6
19.4	7.89 .10	28.4 0.8	21.81 .09	32.9 0.4	12.00 .09	30.5 0.7	22.85 .08	14.3 0.6
Mar. 1.4	7.77 .14	29.2 0.8	21.71 .12	32.5 0.3	11.88 .13	31.2 0.7	22.74 .12	15.0 0.7
11.3	7.60 .18	29.9 0.7	21.57 .15	32.3 −0.1	11.73 .16	31.8 0.6	22.60 .16	15.6 0.6
21.3	7.41 .20	30.6 0.6	21.40 .17	32.3 0.0	11.55 .19	32.4 0.6	22.43 .18	16.2 0.6
31.3	7.21 .21	31.1 0.4	21.23 .18	32.3 +0.1	11.36 .20	32.9 0.5	22.24 .19	16.8 0.5
April 10.3	7.00 .20	31.4 0.3	21.05 .17	32.5 0.2	11.16 .20	33.3 0.3	22.05 .19	17.2 0.4
20.2	6.80 .19	31.6 +0.1	20.88 .16	32.8 0.3	10.96 .19	33.6 0.2	21.86 .18	17.5 0.3
30.2	6.62 .17	31.6 −0.1	20.72 .15	33.2 0.4	10.79 .17	33.7 +0.1	21.68 .16	17.7 +0.1
May 10.2	6.46 .14	31.5 0.2	20.59 .12	33.7 0.5	10.63 .14	33.8 0.0	21.53 .14	17.8 0.0
20.2	6.34 .10	31.2 0.3	20.48 .09	34.2 0.6	10.51 .10	33.7 −0.2	21.41 .11	17.8 −0.1
30.1	6.26 .06	30.8 0.4	20.40 .06	34.9 0.7	10.43 .07	33.4 0.3	21.32 .07	17.7 0.2
June 9.1	6.21 −.02	30.3 0.5	20.36 −.02	35.6 0.7	10.38 −.03	33.2 0.3	21.27 −.03	17.4 0.3
19.1	6.22 +.02	29.7 0.6	20.36 +.01	36.4 0.8	10.37 +.01	32.8 0.4	21.26 +.01	17.1 0.3
29.0	6.26 .06	29.0 0.6	20.39 .05	37.2 0.8	10.40 .05	32.4 0.4	21.28 .04	16.8 0.4
July 9.0	6.34 .10	28.4 0.7	20.45 .08	38.0 0.8	10.48 .09	31.9 0.5	21.34 .08	16.4 0.4
19.0	6.47 .14	27.7 0.7	20.55 .11	38.9 0.8	10.58 .13	31.4 0.5	21.44 .12	15.9 0.5
29.0	6.62 .18	27.0 0.7	20.67 .14	39.6 0.7	10.73 .16	30.9 0.6	21.58 .15	15.4 0.5
Aug. 7.9	6.82 .21	26.2 0.7	20.83 .17	40.3 0.6	10.90 .19	30.3 0.6	21.74 .18	14.9 0.6
17.9	7.04 .24	25.5 0.8	21.01 .19	40.9 0.5	11.10 .22	29.7 0.6	21.94 .21	14.3 0.6
27.9	7.29 .26	24.7 0.8	21.21 .21	41.3 0.3	11.33 .24	29.0 0.7	22.16 .24	13.6 0.7
Sept. 6.9	7.56 .28	23.9 0.8	21.43 .23	41.5 +0.1	11.59 .27	28.3 0.7	22.41 .26	12.9 0.7
16.8	7.86 .30	23.2 0.8	21.68 .25	41.5 −0.1	11.87 .29	27.6 0.8	22.68 .28	12.2 0.8
26.8	8.17 .32	22.4 0.8	21.94 .27	41.3 0.4	12.16 .30	26.8 0.8	22.97 .30	11.3 0.8
Oct. 6.8	8.50 .33	21.6 0.8	22.22 .28	40.8 0.6	12.47 .32	25.9 0.8	23.27 .31	10.5 0.9
16.7	8.84 .34	20.9 0.7	22.50 .29	40.0 0.8	12.80 .33	25.1 0.8	23.59 .33	9.6 0.9
26.7	9.18 .35	20.2 0.6	22.80 .30	39.1 1.1	13.13 .34	24.3 0.8	23.93 .33	8.7 0.9
Nov. 5.7	9.53 .34	19.6 0.5	23.09 .29	37.9 1.2	13.47 .33	23.5 0.7	24.26 .33	7.8 0.8
15.7	9.87 .33	19.1 0.4	23.38 .28	36.6 1.4	13.80 .33	22.8 0.6	24.59 .33	7.0 0.7
25.6	10.20 .32	18.8 0.3	23.66 .27	35.2 1.4	14.12 .31	22.2 0.5	24.92 .31	6.3 0.6
Dec. 5.6	10.50 .29	18.6 −0.1	23.92 .25	33.7 1.5	14.42 .29	21.8 0.4	25.22 .29	5.8 0.5
15.6	10.78 .25	18.6 +0.1	24.15 .22	32.3 1.4	14.69 .26	21.5 −0.2	25.50 .26	5.4 0.3
25.6	11.01 .21	18.8 0.3	24.35 .18	30.8 1.4	14.92 .21	21.4 0.0	25.74 .22	5.2 −0.1
35.5	11.19 +.16	19.1 +0.4	24.51 +.13	29.5 −1.3	15.11 +.17	21.5 +0.2	25.93 +.17	5.1 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argus (ρ).		ε Hydræ.		ι Ursæ Majoris.		κ Cancri.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$8^h\ 1^m$	$23^\circ\ 55'$	$8^h\ 39^m$	$6^\circ\ 53'$	$8^h\ 50^m$	$48^\circ\ 33'$	$9^h\ 0^m$	$11^\circ\ 11'$
	s	″	s	″	s	″	s	″
Jan. 0.6	54.40 +.16	28.7 +2.8	45.02 +.21	67.2 −1.4	6.50 +.32	24.7 +0.8	33.48 +.24	54.6 −1.2
10.6	54.54 .11	31.5 2.8	45.21 .17	65.9 1.3	6.78 .25	25.6 1.1	33.70 .19	53.5 1.1
20.5	54.62 .06	34.2 2.6	45.36 .12	64.7 1.1	7.00 .18	26.9 1.4	33.87 .14	52.5 0.9
30.5	54.66 +.01	36.8 2.4	45.45 .07	63.7 0.9	7.15 .11	28.5 1.6	33.99 .09	51.8 0.6
Feb. 9.5	54.64 −.04	39.1 2.2	45.50 +.02	63.0 0.6	7.23 +.04	30.2 1.8	34.05 +.04	51.2 0.4
19.4	54.57 .09	41.1 1.9	45.49 −.03	62.5 0.4	7.23 −.03	32.1 1.9	34.07 −.01	51.0 −0.2
Mar. 1.4	54.46 .13	42.8 1.6	45.44 .07	62.2 0.2	7.16 .10	33.9 1.8	34.04 .05	50.9 0.0
11.4	54.31 .16	44.2 1.2	45.35 .11	62.0 −0.1	7.03 .16	35.7 1.7	33.96 .09	51.0 +0.2
21.4	54.14 .18	45.2 0.8	45.23 .13	62.0 +0.1	6.85 .20	37.4 1.5	33.86 .12	51.2 0.3
31.3	53.94 .20	45.9 0.5	45.08 .15	62.2 0.2	6.63 .23	38.8 1.3	33.72 .14	51.5 0.4
April 10.3	53.74 .20	46.1 +0.1	44.92 .16	62.5 0.3	6.38 .25	40.0 1.0	33.57 .15	51.9 0.4
20.3	53.55 .19	46.1 −0.2	44.76 .16	62.9 0.4	6.13 .26	40.8 0.7	33.42 .16	52.4 0.5
30.3	53.36 .18	45.6 0.6	44.60 .15	63.3 0.5	5.87 .25	41.4 +0.4	33.26 .15	52.9 0.5
May 10.2	53.19 .16	44.9 0.9	44.46 .14	63.8 0.5	5.63 .23	41.6 0.0	33.11 .14	53.4 0.5
20.2	53.03 .14	43.8 1.2	44.33 .12	64.4 0.6	5.41 .20	41.4 −0.3	32.98 .12	54.0 0.5
30.2	52.91 .11	42.4 1.5	44.22 .09	65.0 0.6	5.22 .17	40.9 0.6	32.87 .10	54.5 0.5
June 9.1	52.82 .07	40.7 1.8	44.14 .07	65.6 0.6	5.07 .13	40.1 0.9	32.77 .08	55.0 0.5
19.1	52.77 .04	38.8 2.0	44.09 .04	66.2 0.7	4.96 .09	39.1 1.2	32.71 .05	55.5 0.5
29.1	52.74 −.01	36.8 2.1	44.07 −.01	66.9 0.7	4.89 −.04	37.7 1.4	32.67 −.02	55.9 0.4
July 9.1	52.75 +.03	34.6 2.2	44.07 +.02	67.5 0.6	4.87 +.01	36.2 1.6	32.66 +.01	56.3 0.4
19.0	52.80 .06	32.4 2.2	44.11 .05	68.1 0.6	4.90 .05	34.5 1.8	32.68 .03	56.6 0.3
29.0	52.88 .10	30.2 2.2	44.17 .08	68.7 0.5	4.98 .10	32.7 1.9	32.73 .06	56.9 0.2
Aug. 8.0	52.99 .13	28.0 2.1	44.26 .11	69.1 0.4	5.09 .14	30.7 2.0	32.81 .09	57.0 +0.1
18.0	53.14 .16	26.0 1.9	44.39 .14	69.5 0.3	5.26 .18	28.7 2.0	32.91 .12	57.1 0.0
27.9	53.31 .19	24.3 1.6	44.53 .16	69.7 +0.1	5.46 .22	26.6 2.1	33.04 .15	57.0 −0.2
Sept. 6.9	53.52 .22	22.9 1.2	44.71 .19	69.7 −0.1	5.70 .26	24.5 2.1	33.20 .17	56.7 0.4
16.9	53.75 .24	21.8 0.8	44.91 .21	69.5 0.3	5.99 .30	22.5 2.0	33.39 .20	56.2 0.6
26.8	54.01 .27	21.2 −0.4	45.14 .24	69.0 0.5	6.31 .34	20.5 1.9	33.61 .23	55.6 0.8
Oct. 6.8	54.23 .29	21.0 +0.1	45.39 .26	68.4 0.8	6.66 .37	18.7 1.8	33.85 .26	54.7 1.0
16.8	54.58 .30	21.4 0.6	45.66 .28	67.5 1.0	7.05 .40	16.9 1.6	34.11 .28	53.6 1.2
26.8	54.88 .31	22.2 1.1	45.95 .30	66.3 1.2	7.46 .42	15.4 1.4	34.40 .30	52.4 1.3
Nov. 5.7	55.19 .31	23.5 1.5	46.25 .31	65.0 1.4	7.89 .44	14.1 1.2	34.71 .31	51.0 1.5
15.7	55.50 .30	25.3 1.9	46.56 .31	63.6 1.5	8.33 .44	13.1 0.9	35.02 .32	49.4 1.5
25.7	55.80 .29	27.4 2.3	46.87 .30	62.0 1.6	8.77 .44	12.4 0.5	35.34 .31	47.9 1.6
Dec. 5.7	56.08 .26	29.8 2.5	47.17 .29	60.4 1.6	9.21 .42	12.0 −0.2	35.65 .30	46.3 1.6
15.6	56.32 .23	32.5 2.7	47.45 .27	58.7 1.6	9.61 .39	12.0 +0.2	35.95 .28	44.8 1.5
25.6	56.54 .19	35.3 2.8	47.70 .24	57.2 1.5	9.99 .35	12.4 0.5	36.22 .26	43.3 1.4
35.6	56.71 +.14	38.1 +2.8	47.92 +.20	55.8 −1.3	10.31 +.29	13.1 +0.8	36.46 +.22	42.0 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Argus.		α Hydræ.		θ Ursæ Majoris.		ι Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 13	° ′ 58 42	h m 9 21	° ′ 8 5	h m 9 23	° ′ 52 16	h m 9 38	° ′ 24 22
	s	″	s	″	s	″	s	″
Jan. 0.6	34.58 +.31	58.5 +3.4	4.20 +.24	6.3 +2.2	57.67 +.37	35.3 +0.6	18.66 +.28	53.3 −0.8
10.6	34.85 .23	62.1 3.6	4.42 .20	8.5 2.1	58.01 .31	36.2 1.1	18.92 .24	52.6 0.5
20.6	35.04 .15	65.8 3.7	4.60 .15	10.6 2.0	58.29 .24	37.5 1.4	19.14 .19	52.3 −0.2
30.5	35.14 +.06	69.6 3.7	4.72 .10	12.5 1.8	58.49 .17	39.1 1.7	19.31 .14	52.3 +0.1
Feb. 9.5	35.16 −.02	73.3 3.6	4.80 .05	14.2 1.6	58.62 .09	41.0 1.9	19.42 .09	52.5 0.3
19.5	35.10 .10	76.8 3.4	4.83 +.01	15.7 1.4	58.67 +.01	43.0 2.1	19.48 +.03	53.0 0.6
Mar. 1.4	34.97 .17	80.2 3.2	4.81 −.04	17.0 1.1	58.64 −.06	45.1 2.1	19.49 −.02	53.7 0.8
11.4	34.77 .23	83.2 2.8	4.75 .08	17.9 0.8	58.54 .13	47.2 2.0	19.45 .06	54.5 0.9
21.4	34.51 .28	85.8 2.4	4.66 .11	18.6 0.6	58.38 .18	49.2 1.9	19.37 .10	55.4 0.9
31.4	34.21 .32	88.0 2.0	4.53 .13	19.1 0.3	58.18 .23	50.9 1.7	19.25 .13	56.3 1.0
April 10.3	33.87 .35	89.8 1.5	4.39 .14	19.3 +0.1	57.93 .26	52.5 1.4	19.11 .15	57.3 0.9
20.3	33.51 .37	91.1 1.0	4.24 .15	19.3 −0.1	57.67 .27	53.7 1.1	18.95 .16	58.2 0.8
30.3	33.14 .37	91.8 +0.5	4.09 .15	19.1 0.3	57.39 .27	54.6 0.7	18.80 .16	59.0 0.7
May 10.3	32.77 .36	92.1 0.0	3.94 .14	18.7 0.5	57.12 .26	55.1 +0.3	18.64 .15	59.7 0.6
20.2	32.41 .35	91.8 −0.5	3.80 .13	18.1 0.7	56.86 .24	55.2 −0.1	18.49 .14	60.2 0.5
30.2	32.07 .33	91.1 1.0	3.68 .11	17.3 0.8	56.63 .21	54.9 0.5	18.35 .13	60.6 0.3
June 9.2	31.76 .30	89.8 1.5	3.58 .09	16.4 1.0	56.43 .18	54.2 0.8	18.23 .11	60.8 +0.2
19.1	31.48 .26	88.1 1.9	3.49 .07	15.3 1.1	56.27 .14	53.2 1.1	18.14 .08	60.9 0.0
29.1	31.25 .21	86.0 2.3	3.43 .05	14.1 1.2	56.15 .10	51.9 1.4	18.07 .06	60.8 −0.1
July 9.1	31.06 .16	83.5 2.6	3.40 −.02	12.9 1.3	56.08 .05	50.3 1.7	18.03 −.03	60.6 0.3
19.1	30.92 .10	80.8 2.8	3.39 .00	11.6 1.3	56.05 −.01	48.5 1.9	18.02 .00	60.2 0.5
29.0	30.85 −.04	77.8 3.0	3.41 +.03	10.4 1.2	56.07 +.04	46.4 2.1	18.03 +.03	59.7 0.6
Aug. 8.0	30.84 +.02	74.8 3.1	3.45 .06	9.2 1.2	56.14 .09	44.2 2.3	18.08 .06	59.0 0.7
18.0	30.89 .09	71.7 3.0	3.53 .09	8.0 1.0	56.25 .14	41.9 2.4	18.15 .09	58.2 0.9
28.0	31.01 .15	68.7 2.9	3.63 .12	7.1 0.8	56.41 .18	39.5 2.4	18.25 .12	57.2 1.0
Sept. 6.9	31.19 .22	65.9 2.6	3.76 .15	6.3 0.6	56.62 .23	37.1 2.4	18.39 .15	56.1 1.2
16.9	31.45 .28	63.5 2.3	3.93 .18	5.9 −0.3	56.87 .28	34.6 2.4	18.56 .16	54.9 1.3
26.9	31.76 .31	61.4 1.8	4.12 .21	5.7 0.0	57.17 .32	32.2 2.3	18.76 .22	53.5 1.5
Oct. 6.8	32.13 .40	59.9 1.3	4.34 .24	5.9 +0.3	57.52 .36	29.9 2.2	18.99 .25	51.9 1.6
16.8	32.55 .44	58.9 0.7	4.59 .26	6.3 0.7	57.90 .40	27.8 2.0	19.25 .27	50.3 1.7
26.8	33.01 .47	58.5 −0.1	4.86 .28	7.2 1.0	58.31 .43	25.8 1.8	19.53 .30	48.6 1.7
Nov. 5.8	33.49 .49	58.8 +0.6	5.16 .30	8.4 1.4	58.75 .45	24.1 1.5	19.85 .32	46.9 1.7
15.7	33.98 .49	59.8 1.2	5.46 .31	10.0 1.7	59.22 .47	22.7 1.2	20.18 .34	45.2 1.7
25.7	34.47 .48	61.3 1.8	5.78 .31	11.7 1.9	59.69 .47	21.7 0.8	20.52 .34	43.6 1.6
Dec. 5.7	34.93 .45	63.4 2.4	6.08 .30	13.8 2.1	60.17 .46	21.0 −0.4	20.87 .34	42.1 1.4
15.7	35.36 .40	66.1 2.9	6.38 .28	15.9 2.2	60.62 .44	20.8 0.0	21.20 .33	40.8 1.2
25.6	35.74 .34	69.2 3.2	6.65 .26	18.1 2.2	61.04 .40	21.0 +0.4	21.52 .30	39.7 0.9
35.6	36.05 +.27	72.6 +3.5	6.90 +.23	20.3 +2.2	61.42 +.35	21.7 +0.9	21.81 +.27	38.9 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (*Regulus*)		γ¹ Leonis.		ρ Leonis	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North*
	h m 9 45 s	° ′ 26 37 ″	h m 10 1 s	° ′ 12 36 ″	h m 10 12 s	° ′ 20 30 ″	h m 10 25 s	° ′ 9 58 ″
Jan. 0.6	12.37 +.30	41.3 −0.7	17.96 +.28	48.4 −1.5	38.80 +.30	35.2 −1.2	49.06 +.28	75.3 −1.6
10.6	12.64 .25	40.8 0.4	18.22 .24	47.1 1.2	39.08 .26	34.2 0.9	49.33 .26	73.6 1.5
20.6	12.87 .20	40.6 −0.1	18.45 .20	46.0 1.0	39.32 .22	33.5 0.6	49.58 .23	72.3 1.2
30.6	13.05 .15	40.6 +0.2	18.63 .15	45.1 0.7	39.52 .17	33.1 −0.3	49.77 .17	71.2 0.9
Feb. 9.5	13.17 .10	41.0 0.5	18.75 .10	44.6 0.4	39.67 .12	33.0 0.0	49.92 .12	70.5 0.6
19.5	13.24 +.04	41.6 0.7	18.83 .05	44.3 −0.2	39.76 .07	33.2 +0.3	50.02 .06	70.0 0.4
Mar. 1.5	13.25 −.01	42.4 0.9	18.86 +.01	44.3 +0.1	39.80 +.02	33.6 0.5	50.08 +.03	69.7 −0.1
11.4	13.22 .06	43.3 1.0	18.84 −.04	44.4 0.3	39.80 −.03	34.2 0.7	50.09 −.01	69.8 +0.1
21.4	13.14 .09	44.4 1.1	18.79 .07	44.8 0.4	39.75 .06	35.0 0.8	50.06 .05	70.0 0.3
31.4	13.03 .13	45.5 1.1	18.70 .10	45.2 0.5	39.67 .10	35.9 0.9	49.99 .08	70.3 0.4
April 10.4	12.89 .15	46.5 1.0	18.59 .12	45.8 0.6	39.56 .12	36.8 0.9	49.90 .10	70.8 0.5
20.3	12.73 .16	47.5 0.9	18.46 .13	46.5 0.6	39.43 .13	37.7 0.9	49.78 .12	71.4 0.6
30.3	12.57 .16	48.3 0.8	18.32 .14	47.1 0.7	39.29 .14	38.6 0.8	49.66 .13	72.1 0.7
May 10.3	12.41 .16	49.1 0.6	18.18 .14	47.8 0.7	39.15 .14	39.4 0.8	49.53 .13	72.8 0.7
20.3	12.25 .15	49.6 0.5	18.04 .13	48.4 0.6	39.01 .14	40.1 0.7	49.40 .13	73.4 0.7
30.2	12.11 .13	50.0 0.3	17.91 .12	49.0 0.6	38.87 .13	40.7 0.5	49.27 .12	74.1 0.6
June 9.2	11.99 .11	50.2 +0.1	17.80 .10	49.6 0.5	38.75 .11	41.1 0.4	49.16 .11	74.7 0.6
19.2	11.89 .09	50.3 −0.1	17.71 .08	50.1 0.5	38.65 .09	41.5 0.2	49.05 .09	75.3 0.5
29.1	11.82 .06	50.1 0.2	17.63 .06	50.5 0.4	38.56 .07	41.6 +0.1	48.97 .08	75.8 0.5
July 9.1	11.77 .03	49.8 0.4	17.58 .04	50.8 0.3	38.50 .05	41.6 −0.1	48.90 .06	76.3 0.4
19.1	11.75 −.01	49.3 0.6	17.54 −.02	51.0 0.2	38.46 .03	41.5 0.2	48.85 .04	76.6 0.3
29.1	11.75 +.02	48.7 0.7	17.54 +.01	51.1 +0.1	38.44 −.01	41.2 0.4	48.82 −.02	76.8 +0.2
Aug. 8.0	11.79 .05	47.9 0.9	17.55 .03	51.1 −0.1	38.45 +.02	40.7 0.6	48.82 +.01	76.9 0.0
18.0	11.86 .08	46.9 1.1	17.60 .06	51.0 0.2	38.48 .05	40.1 0.7	48.84 .03	76.9 −0.1
28.0	11.95 .11	45.8 1.2	17.67 .09	50.7 0.4	38.55 .08	39.2 0.9	48.88 .06	76.7 0.3
Sept. 7.0	12.08 .15	44.5 1.3	17.77 .12	50.2 0.6	38.65 .11	38.2 1.1	48.96 .09	76.3 0.5
16.9	12.25 .18	43.1 1.5	17.91 .15	49.5 0.8	38.78 .15	37.1 1.3	49.07 .12	75.7 0.7
26.9	12.44 .21	41.6 1.6	18.07 .18	48.6 1.0	38.94 .18	35.7 1.4	49.21 .16	74.9 0.9
Oct. 6.9	12.67 .24	39.9 1.7	18.27 .21	47.5 1.2	39.13 .21	34.2 1.6	49.38 .19	73.9 1.1
16.8	12.93 .27	38.2 1.7	18.50 .24	46.1 1.4	39.36 .25	32.6 1.7	49.59 .23	72.6 1.4
26.8	13.22 .30	36.4 1.8	18.76 .27	44.6 1.6	39.62 .28	30.8 1.8	49.84 .26	71.2 1.6
Nov. 5.8	13.53 .32	34.6 1.8	19.04 .30	43.0 1.7	39.91 .30	28.9 1.9	50.11 .28	69.5 1.7
15.8	13.87 .34	32.9 1.7	19.35 .31	41.2 1.8	40.23 .32	27.1 1.9	50.40 .31	67.7 1.8
25.7	14.21 .35	31.2 1.6	19.67 .32	39.4 1.8	40.56 .33	25.2 1.8	50.72 .32	65.8 1.9
Dec. 5.7	14.56 .35	29.7 1.4	20.00 .32	37.6 1.8	40.90 .34	23.4 1.7	51.04 .33	63.9 1.9
15.7	14.91 .33	28.4 1.2	20.32 .31	35.9 1.7	41.23 .33	21.8 1.5	51.37 .32	62.0 1.8
25.7	15.23 .31	27.4 0.9	20.63 .30	34.2 1.5	41.56 .31	20.3 1.3	51.68 .31	60.2 1.7
35.6	15.52 +.27	26.6 −0.7	20.91 +.27	32.8 −1.3	41.86 +.28	19.1 −1.0	51.98 +.28	58.5 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	10h 39m	58° 58′	10h 42m	11° 14′	10h 55m	62° 27′	11h 7m	21° 14′
	s	″	s	″	s	″	s	″
Jan. 0.7	56.76 +.43	55.3 +2.9	16.35 +.30	44.8 −1.7	29.79 +.66	45.7 +0.1	2.25 +.33	56.3 −1.4
10.6	57.16 .38	58.4 3.2	16.64 .27	43.3 1.4	30.33 .61	46.0 0.7	2.56 .30	55.0 1.1
20.6	57.51 .31	61.7 3.4	16.89 .23	42.0 1.2	30.81 .45	47.0 1.2	2.84 .26	54.0 0.8
30.6	57.79 .24	65.2 3.6	17.10 .19	40.9 0.9	31.23 .37	48.4 1.7	3.09 .22	53.4 0.4
Feb. 9.6	57.98 .16	68.9 3.7	17.27 .14	40.2 0.6	31.56 .28	50.3 2.1	3.29 .18	53.1 −0.1
19.5	58.10 .08	72.6 3.6	17.39 .09	39.8 0.3	31.79 .19	52.6 2.4	3.44 .13	53.2 +0.2
Mar. 1.5	58.15 +.01	76.2 3.5	17.46 .05	39.6 −0.1	31.94 +.09	55.2 2.6	3.54 .08	53.6 0.5
11.5	58.12 −.06	79.6 3.3	17.49 +.01	39.7 +0.2	31.98 .00	57.8 2.7	3.59 +.03	54.3 0.8
21.5	58.02 .12	82.9 3.1	17.47 −.03	39.9 0.4	31.93 −.09	60.6 2.7	3.60 −.01	55.2 1.0
31.4	57.86 .18	85.8 2.8	17.42 .06	40.4 0.5	31.80 .17	63.2 2.6	3.57 .05	56.2 1.1
April 10.4	57.65 .23	88.4 2.4	17.34 .09	41.0 0.6	31.60 .23	65.7 2.3	3.51 .08	57.3 1.1
20.4	57.40 .27	90.6 2.0	17.23 .11	41.7 0.7	31.33 .28	67.9 2.0	3.42 .10	58.5 1.1
30.3	57.12 .29	92.4 1.5	17.12 .12	42.4 0.7	31.03 .32	69.7 1.7	3.31 .12	59.6 1.1
May 10.3	56.82 .31	93.7 1.1	16.99 .13	43.1 0.7	30.69 .35	71.2 1.2	3.18 .13	60.7 1.0
20.3	56.49 .32	94.5 0.6	16.87 .13	43.9 0.7	30.33 .36	72.2 0.8	3.05 .13	61.6 0.9
30.3	56.17 .33	94.8 +0.1	16.74 .12	44.6 0.7	29.98 .35	72.8 +0.3	2.92 .13	62.5 0.8
June 9.2	55.84 .32	94.6 −0.4	16.62 .11	45.2 0.6	29.63 .34	72.8 −0.2	2.79 .12	63.2 0.6
19.2	55.52 .31	94.0 0.9	16.52 .10	45.8 0.5	29.30 .31	72.4 0.7	2.67 .12	63.6 0.4
29.2	55.22 .29	92.8 1.4	16.42 .09	46.3 0.5	29.00 .28	71.5 1.1	2.56 .10	64.0 +0.2
July 9.2	54.95 .26	91.2 1.8	16.34 .07	46.7 0.4	28.74 .24	70.2 1.6	2.46 .09	64.1 0.0
19.1	54.71 .22	89.2 2.2	16.28 .05	47.0 0.2	28.52 .20	68.4 1.9	2.38 .07	64.0 −0.2
29.1	54.51 .18	86.9 2.5	16.24 .03	47.2 +0.1	28.35 .15	66.3 2.3	2.32 .05	63.7 0.4
Aug. 8.1	54.35 .12	84.2 2.7	16.22 −.01	47.2 0.0	28.23 .09	63.9 2.6	2.28 .03	63.3 0.6
18.0	54.26 −.06	81.5 2.8	16.23 +.02	47.1 −0.2	28.17 −.03	61.2 2.8	2.26 −.01	62.6 0.8
28.0	54.23 .00	78.6 2.9	16.26 .05	46.8 0.4	28.16 +.03	58.2 3.0	2.26 +.02	61.7 1.0
Sept. 7.0	54.26 +.07	75.7 2.8	16.32 .08	46.3 0.6	28.23 .09	55.1 3.1	2.30 .05	60.6 1.2
17.0	54.37 .14	72.9 2.7	16.41 .11	45.6 0.8	28.35 .16	51.9 3.2	2.37 .09	59.3 1.4
26.9	54.55 .22	70.3 2.4	16.53 .14	44.7 1.0	28.55 .23	48.7 3.3	2.47 .12	57.8 1.6
Oct. 6.9	54.81 .29	68.1 2.0	16.70 .18	43.6 1.2	28.81 .29	45.4 3.2	2.62 .16	56.1 1.8
16.9	55.13 .35	66.3 1.5	16.89 .21	42.2 1.4	29.14 .36	42.2 3.1	2.80 .20	54.2 2.0
26.9	55.52 .41	65.0 1.0	17.12 .25	40.7 1.6	29.54 .43	39.3 2.9	3.02 .24	52.2 2.0
Nov. 5.8	55.96 .46	64.3 −0.4	17.39 .28	38.9 1.8	30.00 .49	36.5 2.6	3.27 .27	50.1 2.2
15.8	56.44 .49	64.3 +0.2	17.68 .30	37.1 1.9	30.52 .53	34.0 2.2	3.56 .30	47.9 2.2
25.8	56.94 .51	64.8 0.8	17.99 .32	35.1 2.0	31.07 .57	32.0 1.8	3.88 .32	45.7 2.0
Dec. 5.7	57.46 .51	66.0 1.5	18.31 .33	33.1 2.0	31.66 .59	30.4 1.3	4.21 .34	43.6 2.0
15.7	57.97 .49	67.7 2.0	18.64 .32	31.2 1.9	32.25 .60	29.3 0.8	4.55 .31	41.7 1.8
25.7	58.44 .46	70.0 2.5	18.96 .31	29.4 1.8	32.85 .58	28.8 −0.3	4.89 .33	40.0 1.6
35.7	58.88 +.42	72.8 +3.0	19.27 +.29	27.7 −1.6	33.42 +.55	28.8 +0.3	5.22 +.32	38.5 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		91 Leonis (υ).		β Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	11h 12m	14° 3′	11h 21m	3° 34′	11h 30m	0° 5′	11h 42m	15° 18′
	s	″	s	″	s	″	s	″
Jan. 0.7	42.26 +.31	32.6 +2.3	6.25 +.31	73.9 −1.9	8.78 +.31	25.6 +2.0	16.60 +.32	48.8 −1.7
10.7	42.55 .28	34.9 2.3	6.55 .29	72.0 1.8	9.08 .29	27.6 1.9	16.91 .30	47.2 1.5
20.6	42.81 .25	37.3 2.3	6.82 .26	70.2 1.6	9.36 .26	29.5 1.8	17.21 .28	45.8 1.2
30.6	43.04 .21	39.5 2.2	7.06 .22	68.7 1.4	9.60 .22	31.2 1.6	17.47 .24	44.8 0.9
Feb. 9.6	43.23 .16	41.7 2.0	7.25 .17	67.5 1.1	9.80 .18	32.6 1.3	17.69 .20	44.1 0.6
19.6	43.37 .12	43.6 1.8	7.41 .13	66.5 0.8	9.96 .14	33.8 1.1	17.87 .16	43.7 −0.2
Mar. 1.5	43.47 .07	45.3 1.6	7.51 .09	65.8 0.6	10.08 .09	34.8 0.8	18.00 .11	43.7 +0.1
11.5	43.52 +.03	46.8 1.4	7.58 .05	65.4 0.3	10.15 .05	35.4 0.5	18.09 .07	44.0 0.4
21.5	43.53 −.01	48.0 1.1	7.60 +.01	65.2 −0.1	10.18 +.01	35.8 0.3	18.13 +.03	44.5 0.6
31.5	43.51 .04	49.0 0.9	7.59 −.03	65.2 +0.1	10.18 −.02	36.0 +0.1	18.14 −.01	45.3 0.8
April 10.4	43.45 .07	49.7 0.6	7.54 .06	65.5 0.3	10.14 .05	36.0 −0.1	18.11 .04	46.1 0.9
20.4	43.37 .09	50.2 0.4	7.47 .08	65.9 0.4	10.08 .07	35.7 0.3	18.05 .07	47.1 1.0
30.4	43.27 .10	50.5 +0.1	7.38 .09	66.4 0.6	10.00 .09	35.4 0.4	17.97 .09	48.2 1.0
May 10.3	43.16 .11	50.5 −0.1	7.28 .10	67.0 0.6	9.91 .10	34.9 0.5	17.87 .10	49.2 1.0
20.3	43.05 .12	50.3 0.3	7.17 .11	67.6 0.7	9.80 .11	34.4 0.6	17.76 .11	50.2 1.0
30.3	42.92 .12	49.9 0.5	7.06 .11	68.3 0.7	9.69 .11	33.7 0.7	17.65 .12	51.1 0.9
June 9.3	42.80 .12	49.3 0.6	6.95 .11	69.0 0.7	9.58 .11	33.1 0.7	17.53 .12	51.9 0.8
19.2	42.68 .11	48.6 0.8	6.84 .11	69.7 0.7	9.47 .11	32.3 0.7	17.41 .12	52.6 0.6
29.2	42.57 .11	47.7 1.0	6.73 .10	70.4 0.7	9.36 .10	31.6 0.7	17.30 .11	53.2 0.5
July 9.2	42.47 .10	46.7 1.1	6.64 .09	71.0 0.6	9.26 .09	30.9 0.7	17.19 .10	53.6 0.3
19.2	42.38 .08	45.6 1.1	6.55 .08	71.6 0.5	9.17 .08	30.2 0.7	17.09 .09	53.8 +0.1
29.1	42.31 .06	44.4 1.2	6.48 .06	72.1 0.5	9.10 .07	29.6 0.6	17.01 .08	53.9 0.0
Aug. 8.1	42.25 .04	43.2 1.2	6.43 .04	72.5 0.3	9.04 .06	29.1 0.5	16.93 .06	53.7 −0.2
18.1	42.22 −.02	42.1 1.1	6.40 −.02	72.8 +0.2	9.00 −.03	28.6 0.4	16.88 .04	53.4 0.4
28.0	42.21 +.01	41.0 1.0	6.39 +.01	72.9 0.0	8.98 .00	28.3 0.2	16.85 −.02	52.9 0.6
Sept. 7.0	42.23 .04	40.0 0.9	6.41 .04	72.8 −0.2	8.99 +.03	28.1 −0.1	16.85 +.01	52.1 0.9
17.0	42.29 .07	39.2 0.7	6.46 .07	72.5 0.4	9.03 .06	28.2 +0.2	16.88 .04	51.1 1.1
27.0	42.38 .11	38.7 0.4	6.55 .10	72.1 0.6	9.11 .09	28.5 0.4	16.94 .06	49.9 1.3
Oct. 6.9	42.51 .15	38.4 −0.1	6.67 .14	71.3 0.9	9.22 .13	29.0 0.7	17.04 .12	48.5 1.5
16.9	42.68 .19	38.4 +0.2	6.83 .18	70.3 1.1	9.37 .17	29.8 0.9	17.19 .16	46.8 1.7
26.9	42.89 .23	38.8 0.6	7.03 .22	69.0 1.4	9.56 .21	30.9 1.2	17.37 .20	45.0 1.9
Nov. 5.8	43.14 .26	39.6 1.0	7.26 .26	67.5 1.6	9.79 .25	32.2 1.5	17.59 .24	42.9 2.1
15.8	43.42 .29	40.7 1.3	7.53 .28	65.8 1.8	10.05 .28	33.8 1.7	17.85 .27	40.8 2.2
25.8	43.72 .31	42.2 1.6	7.82 .30	63.9 2.0	10.34 .30	35.6 1.9	18.14 .30	38.6 2.2
Dec. 5.8	44.04 .32	44.0 1.9	8.14 .32	61.9 2.0	10.65 .32	37.6 2.0	18.45 .32	36.4 2.2
15.7	44.37 .33	46.0 2.1	8.46 .32	59.8 2.1	10.98 .32	39.7 2.1	18.78 .33	34.3 2.1
25.7	44.69 .32	48.2 2.3	8.78 .32	57.7 2.0	11.30 .31	41.8 2.1	19.11 .33	32.3 1.9
35.7	45.01 +.30	50.5 +2.4	9.10 +.30	55.8 −1.9	11.61 +.31	43.9 +2.0	19.44 +.32	30.5 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Majoris.		ο Virginis.		η Virginis.		α¹ Crucis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 11 46	° ′ 54 25	h m 11 58	° ′ 9 27	h m 12 13	° ′ 0 4	h m 12 19	° ′ 62 21
	s	″	s	″	s	″	s	″
Jan. 0.7	48.93 +.48	45.5 −0.6	26.21 +.32	73.0 −1.9	6.28 +.32	20.3 −2.1	14.40 +.56	20.1 +1.7
10.7	49.40 .46	45.0 −0.2	26.52 .30	71.1 1.7	6.59 .31	18.3 2.0	14.96 .54	22.1 2.2
20.7	49.85 .42	45.1 +0.4	26.82 .28	69.5 1.6	6.89 .28	16.4 1.8	15.48 .50	24.4 2.6
30.6	50.24 .37	45.8 0.9	27.08 .25	68.2 1.2	7.16 .25	14.7 1.6	15.96 .44	27.2 2.9
Feb. 9.6	50.59 .31	46.9 1.4	27.31 .21	67.1 0.9	7.39 .22	13.2 1.4	16.37 .38	30.3 3.2
19.6	50.86 .24	48.6 1.8	27.50 .17	66.4 0.6	7.59 .18	12.0 1.1	16.71 .31	33.6 3.4
Mar. 1.6	51.06 .17	50.6 2.2	27.65 .12	66.0 −0.2	7.75 .14	11.0 0.8	16.98 .23	37.0 3.5
11.5	51.19 .09	52.9 2.4	27.75 .08	66.0 0.0	7.86 .10	10.3 0.5	17.17 .16	40.5 3.5
21.5	51.24 +.02	55.4 2.6	27.81 .04	66.1 +0.3	7.94 .06	9.9 0.3	17.29 .08	44.0 3.4
31.5	51.23 −.05	58.0 2.6	27.83 +.01	66.5 0.5	7.98 +.02	9.8 −0.1	17.34 +.01	47.3 3.3
April 10.4	51.15 .11	60.6 2.5	27.82 −.03	67.1 0.7	7.98 −.01	9.8 +0.1	17.32 −.05	50.5 3.1
20.4	51.02 .16	63.0 2.3	27.78 .05	67.9 0.8	7.96 .04	10.1 0.3	17.24 .11	53.5 2.8
30.4	50.84 .20	65.2 2.1	27.72 .07	68.7 0.8	7.91 .06	10.4 0.4	17.10 .17	56.1 2.5
May 10.4	50.63 .22	67.2 1.8	27.64 .09	69.6 0.9	7.85 .07	10.9 0.5	16.91 .22	58.4 2.1
20.3	50.40 .24	68.8 1.4	27.54 .10	70.5 0.9	7.77 .09	11.5 0.6	16.67 .26	60.4 1.7
30.3	50.15 .25	70.0 1.0	27.44 .11	71.3 0.8	7.67 .10	12.2 0.7	16.39 .29	61.9 1.3
June 9.3	49.89 .26	70.7 0.6	27.33 .11	72.1 0.8	7.57 .10	12.9 0.7	16.09 .32	62.9 0.8
19.3	49.63 .25	71.1 +0.1	27.22 .11	72.9 0.7	7.46 .11	13.6 0.7	15.76 .34	63.5 +0.3
29.2	49.38 .24	70.9 −0.4	27.11 .11	73.5 0.6	7.35 .11	14.3 0.7	15.41 .36	63.6 −0.2
July 9.2	49.15 .22	70.3 0.8	27.00 .11	74.1 0.5	7.25 .11	15.0 0.7	15.06 .35	63.2 0.6
19.2	48.93 .20	69.3 1.2	26.90 .10	74.5 0.3	7.14 .10	15.6 0.6	14.71 .34	62.4 1.1
29.1	48.75 .17	67.9 1.6	26.81 .09	74.8 0.2	7.04 .09	16.2 0.6	14.37 .32	61.0 1.5
Aug. 8.1	48.59 .14	66.1 2.0	26.72 .07	74.9 +0.1	6.95 .08	16.7 0.5	14.06 .29	59.3 1.9
18.1	48.47 .10	63.9 2.3	26.66 .05	74.9 −0.1	6.88 .06	17.1 0.3	13.79 .24	57.1 2.3
28.1	48.39 .06	61.4 2.6	26.62 −.03	74.7 0.3	6.82 .04	17.4 +0.2	13.57 .19	54.7 2.5
Sept. 7.0	48.35 −.01	58.7 2.9	26.60 .00	74.3 0.5	6.79 −.02	17.5 0.0	13.42 .12	52.1 2.7
17.0	48.37 +.04	55.7 3.1	26.61 +.03	73.7 0.8	6.79 +.01	17.4 −0.2	13.33 −.04	49.3 2.8
27.0	48.44 .10	52.6 3.2	26.66 .06	72.8 1.0	6.82 .05	17.1 0.4	13.33 +.04	46.6 2.7
Oct. 7.0	48.57 .16	49.4 3.3	26.74 .10	71.7 1.2	6.89 .09	16.6 0.7	13.42 .13	43.9 2.6
16.9	48.76 .22	46.1 3.3	26.87 .15	70.4 1.5	7.00 .13	15.8 0.9	13.60 .22	41.4 2.3
26.9	49.01 .28	42.8 3.2	27.04 .19	68.8 1.7	7.15 .18	14.7 1.2	13.87 .31	39.3 2.0
Nov. 5.9	49.32 .34	39.7 3.0	27.24 .23	67.0 1.9	7.35 .22	13.4 1.5	14.22 .39	37.5 1.6
15.8	49.68 .39	36.7 2.8	27.49 .26	65.0 2.0	7.58 .25	11.8 1.7	14.65 .46	36.2 1.0
25.8	50.09 .43	34.1 2.5	27.77 .29	62.9 2.1	7.85 .28	10.0 1.9	15.14 .52	35.5 −0.4
Dec. 5.8	50.55 .47	31.7 2.1	28.07 .31	60.8 2.2	8.15 .30	8.0 2.0	15.68 .56	35.4 +0.2
15.8	51.02 .49	29.9 1.6	28.39 .32	58.6 2.1	8.46 .32	6.0 2.1	16.25 .58	35.8 0.8
25.7	51.51 .49	28.5 1.1	28.72 .33	56.5 2.0	8.79 .32	3.8 2.1	16.84 .58	36.9 1.3
35.7	52.00 +.48	27.6 −0.6	29.04 +.32	54.5 −1.9	9.11 +.32	1.8 −2.1	17.41 +.57	38.5 +1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Corvi.				12 Can. Venaticorum.				θ Virginis.				α Virginis. (*Spica.*)			
	Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *South.*	
	$12^{h}\ 27^{m}$		22° 39′		$12^{h}\ 49^{m}$		39° 1′		$13^{h}\ 3^{m}$		4° 49′		$13^{h}\ 18^{m}$		10° 27′	
	s		″		s		″		s		″		s		″	
Jan. 0.8	24.57	+.35	32.2	+2.1	47.53	+.38	62.4	−1.8	3.88	+.32	38.6	+2.0	11.24	+.33	52.4	+2.0
10.7	24.91	.33	34.3	2.2	47.91	.38	60.8	1.3	4.20	.32	40.6	2.0	11.57	.32	54.3	2.0
20.7	25.23	.30	36.6	2.3	48.29	.36	59.8	0.8	4.51	.30	42.6	1.9	11.89	.31	56.3	1.9
30.7	25.52	.27	38.9	2.3	48.64	.34	59.3	−0.3	4.81	.28	44.5	1.8	12.19	.29	58.2	1.8
Feb. 9.6	25.78	.24	41.2	2.3	48.96	.30	59.3	+0.3	5.07	.25	46.2	1.6	12.47	.26	60.0	1.7
19.6	25.99	.20	43.5	2.2	49.23	.25	59.8	0.8	5.31	.22	47.6	1.3	12.72	.23	61.7	1.5
Mar. 1.6	26.17	.16	45.6	2.0	49.46	.21	60.8	1.2	5.51	.18	48.8	1.1	12.94	.20	63.1	1.3
11.6	26.30	.11	47.5	1.8	49.65	.15	62.2	1.6	5.67	.15	49.7	0.8	13.12	.16	64.4	1.1
21.5	26.40	.07	49.3	1.6	49.77	.10	63.9	1.9	5.80	.11	50.4	0.6	13.26	.12	65.4	0.9
31.5	26.45	.04	50.8	1.4	49.85	.06	65.9	2.1	5.89	.07	50.9	0.3	13.36	.09	66.1	0.6
April 10.5	26.47	+.01	52.1	1.2	49.88	+.01	68.1	2.2	5.95	.04	51.1	+0.1	13.44	.06	66.6	0.4
20.5	26.46	−.02	53.1	1.0	49.87	−.03	70.4	2.3	5.97	+.01	51.1	−0.1	13.48	+.03	67.0	0.2
30.4	26.43	.05	54.0	0.7	49.82	.07	72.6	2.2	5.97	−.01	50.9	0.2	13.49	.00	67.1	+0.1
May 10.4	26.37	.07	54.6	0.5	49.74	.10	74.7	2.0	5.95	.04	50.6	0.4	13.48	−.02	67.1	−0.1
20.4	26.29	.09	54.9	+0.2	49.62	.12	76.6	1.8	5.90	.06	50.2	0.5	13.45	.04	67.0	0.2
30.3	26.19	.10	55.1	0.0	49.49	.14	78.4	1.6	5.84	.07	49.7	0.5	13.40	.06	66.7	0.3
June 9.3	26.08	.11	55.0	−0.2	49.34	.16	79.8	1.3	5.75	.09	49.1	0.6	13.33	.08	66.3	0.4
19.3	25.97	.12	54.7	0.4	49.17	.17	80.9	0.9	5.66	.10	48.5	0.6	13.24	.10	65.9	0.5
29.3	25.84	.13	54.1	0.6	49.00	.17	81.6	0.5	5.56	.11	47.8	0.7	13.13	.11	65.3	0.6
July 9.2	25.71	.13	53.4	0.8	48.83	.17	81.9	+0.2	5.45	.11	47.2	0.7	13.02	.12	64.7	0.6
19.2	25.58	.13	52.5	1.0	48.65	.17	81.9	−0.2	5.33	.12	46.5	0.7	12.90	.12	64.0	0.7
29.2	25.46	.12	51.5	1.1	48.48	.16	81.5	0.6	5.21	.12	45.8	0.6	12.77	.13	63.3	0.7
Aug. 8.2	25.34	.11	50.3	1.2	48.33	.15	80.7	1.0	5.09	.11	45.2	0.6	12.65	.12	62.6	0.7
18.1	25.24	.09	49.0	1.3	48.19	.13	79.6	1.3	4.99	.10	44.7	0.5	12.53	.11	61.9	0.7
28.1	25.16	.07	47.8	1.3	48.06	.11	78.1	1.7	4.89	.08	44.2	0.4	12.42	.10	61.3	0.6
Sept. 7.1	25.10	−.04	46.5	1.2	47.97	.08	76.2	2.0	4.82	.06	43.9	0.2	12.33	.08	60.7	0.5
17.0	25.08	.00	45.3	1.1	47.91	−.04	74.1	2.3	4.77	−.03	43.7	−0.1	12.27	.05	60.3	0.4
27.0	25.10	+.04	44.3	0.9	47.88	.00	71.6	2.6	4.75	.00	43.7	+0.1	12.24	−.01	60.0	−0.2
Oct. 7.0	25.15	.08	43.5	0.7	47.90	+.05	68.9	2.8	4.77	+.04	44.0	0.3	12.24	+.03	59.9	0.0
17.0	25.26	.13	42.9	0.4	47.98	.10	66.1	2.9	4.83	.08	44.4	0.6	12.29	.07	60.0	+0.2
26.9	25.41	.18	42.7	−0.1	48.10	.15	63.1	3.0	4.93	.13	45.2	0.9	12.38	.12	60.3	0.5
Nov. 5.9	25.61	.22	42.8	+0.3	48.27	.20	60.0	3.1	5.09	.18	46.2	1.1	12.52	.16	61.0	0.8
15.9	25.85	.26	43.2	0.7	48.50	.25	56.9	3.0	5.28	.22	47.5	1.4	12.71	.21	61.9	1.1
25.9	26.13	.30	44.1	1.0	48.78	.30	53.9	2.9	5.52	.26	49.0	1.6	12.94	.25	63.1	1.3
Dec. 5.8	26.44	.32	45.3	1.4	49.09	.34	51.1	2.7	5.79	.29	50.7	1.8	13.21	.28	64.6	1.6
15.8	26.77	.34	46.8	1.7	49.45	.36	48.5	2.4	6.09	.31	52.6	2.0	13.50	.31	66.3	1.8
25.8	27.11	.34	48.7	2.0	49.82	.38	46.2	2.1	6.41	.32	54.6	2.0	13.82	.32	68.1	1.9
35.7	27.46	+.34	50.7	+2.2	50.20	+.39	44.3	−1.6	6.74	+.32	56.7	+2.0	14.15	+.33	70.1	+2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 13 27	° ′ 0 4	h m 13 42	° ′ 49 58	h m 13 48	° ′ 19 3	h m 13 54	° ′ 59 43
	s	″	s	″	s	″	s	″
Jan. 0.8	54.77 +.32	68.9 −2.1	16.57 +.41	29.3 −2.1	20.51 +.32	52.5 −2.2	27.88 +.55	25.9 +0.5
10.8	55.09 .32	66.9 2.0	17.00 .43	27.4 1.6	20.84 .33	50.4 2.0	28.43 .56	26.6 1.0
20.7	55.41 .31	65.0 1.8	17.43 .43	26.1 1.0	21.17 .32	48.6 1.7	28.99 .55	27.8 1.4
30.7	55.71 .29	63.3 1.6	17.86 .41	25.3 −0.4	21.48 .31	47.1 1.3	29.53 .53	29.5 1.9
Feb. 9.7	55.99 .27	61.7 1.4	18.26 .38	25.2 +0.2	21.78 .29	46.0 0.8	30.04 .49	31.6 2.2
19.7	56.24 .24	60.5 1.1	18.62 .35	25.7 0.8	22.06 .26	45.4 −0.4	30.51 .45	33.9 2.5
Mar. 1.6	56.46 .20	59.5 0.8	18.95 .30	26.8 1.3	22.30 .23	45.2 0.0	30.93 .39	36.6 2.7
11.6	56.64 .17	58.9 0.5	19.22 .25	28.3 1.8	22.51 .19	45.4 +0.4	31.30 .34	39.4 2.9
21.6	56.79 .13	58.5 −0.3	19.44 .19	30.3 2.2	22.68 .15	46.1 0.8	31.61 .28	42.3 2.9
31.5	56.91 .10	58.3 0.0	19.60 .13	32.7 2.5	22.82 .12	47.0 1.1	31.85 .22	45.3 3.0
April 10.5	56.99 .06	58.4 +0.2	19.70 .07	25.3 2.7	22.91 .08	48.2 1.3	32.04 .16	48.2 2.9
20.5	57.04 .03	58.8 0.4	19.75 +.02	38.0 2.7	22.98 .05	49.6 1.5	32.17 .10	51.1 2.8
30.5	57.06 +.01	59.2 0.5	19.74 −.03	40.8 2.7	23.01 +.02	51.1 1.6	32.24 +.04	53.9 2.7
May 10.4	57.05 −.02	59.8 0.6	19.68 .08	43.5 2.6	23.01 −.01	52.7 1.6	32.25 −.02	56.5 2.5
20.4	57.03 .04	60.5 0.7	19.58 .12	46.0 2.4	22.99 .04	54.3 1.6	32.20 .07	58.9 2.3
30.4	56.98 .06	61.3 0.7	19.45 .15	48.2 2.1	22.94 .06	55.9 1.5	32.10 .13	61.0 2.0
June 9.4	56.91 .08	62.0 0.8	19.27 .18	50.2 1.8	22.87 .08	57.3 1.3	31.95 .18	62.9 1.6
19.3	56.82 .09	62.8 0.8	19.08 .21	51.8 1.4	22.77 .10	58.5 1.2	31.75 .22	64.3 1.3
29.3	56.73 .10	63.5 0.7	18.85 .23	52.9 1.0	22.67 .12	59.6 1.0	31.51 .26	65.4 0.9
July 9.3	56.61 .12	64.2 0.7	18.62 .24	53.7 0.5	22.54 .13	60.5 0.8	31.23 .29	66.0 +0.4
19.2	56.49 .12	64.9 0.6	18.37 .25	54.0 +0.1	22.41 .14	61.1 0.5	30.92 .31	66.2 0.0
29.2	56.37 .12	65.4 0.5	18.13 .25	53.8 −0.4	22.27 .14	61.5 +0.3	30.60 .33	65.9 −0.5
Aug. 8.2	56.24 .12	65.9 0.4	17.88 .24	53.1 0.9	22.12 .14	61.7 0.0	30.27 .33	65.2 0.9
18.2	56.12 .12	66.3 0.3	17.64 .23	52.0 1.3	21.98 .14	61.5 −0.3	29.94 .32	64.1 1.3
28.1	56.01 .10	66.5 +0.2	17.42 .21	50.5 1.7	21.85 .13	61.1 0.6	29.63 .29	62.6 1.7
Sept. 7.1	55.92 .08	66.6 0.0	17.23 .18	48.6 2.1	21.73 .11	60.3 0.9	29.36 .25	60.7 2.0
17.1	55.84 .06	66.5 −0.2	17.07 .14	46.2 2.5	21.63 .08	59.3 1.2	29.14 .20	58.6 2.2
27.1	55.80 −.02	66.3 0.4	16.94 .10	43.6 2.8	21.56 .05	58.0 1.4	28.97 .13	56.3 2.4
Oct. 7.0	55.80 +.02	65.8 0.6	16.87 −.04	40.6 3.1	21.53 −.01	56.5 1.7	28.88 −.05	53.8 2.5
17.0	55.83 .06	65.0 0.9	16.86 +.01	37.4 3.3	21.53 +.03	54.6 2.0	28.88 +.04	51.3 2.4
27.0	55.91 .10	64.0 1.1	16.90 .08	34.0 3.4	21.59 .08	52.6 2.2	28.96 .13	49.0 2.3
Nov. 5.9	56.04 .15	62.8 1.4	17.01 .14	30.5 3.5	21.69 .13	50.3 2.4	29.13 .22	46.8 2.0
15.9	56.21 .19	61.3 1.6	17.19 .21	26.9 3.5	21.84 .17	47.8 2.5	29.39 .30	44.9 1.7
25.9	56.42 .23	59.6 1.8	17.42 .27	23.5 3.4	22.03 .22	45.2 2.6	29.73 .38	43.4 1.3
Dec. 5.9	56.68 .27	57.7 1.9	17.72 .33	20.2 3.2	22.27 .26	42.6 2.6	30.15 .45	42.3 0.8
15.8	56.96 .30	55.7 2.0	18.07 .37	17.1 2.9	22.55 .29	40.0 2.5	30.63 .50	41.7 −0.3
25.8	57.27 .31	53.6 2.1	18.46 .40	14.5 2.5	22.85 .31	37.5 2.4	31.15 .53	41.6 +0.2
35.8	57.59 +.32	51.5 −2.1	18.88 +.43	12.2 −2.0	23.18 +.32	35.2 −2.2	31.69 +.55	42.1 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Bootis. (*Arcturus.*)		θ Bootis.		α² Centauri.		ι Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 9	° ′ 19 52	h m 14 20	° ′ 52 27	h m 14 30	° ′ 60 16	h m 14 39	° ′ 27 37
	s	″	s	″	s	″	s	″
Jan. 0.8	34.97 +.31	32.6 −2.4	38.44 +.41	49.2 −2.5	35.81 +.53	33.2 0.0	9.70 +.31	67.5 −2.5
10.8	35.29 .32	30.4 2.1	38.86 .43	47.0 2.0	36.35 .55	33.4 +0.5	10.02 .33	65.1 2.2
20.8	35.62 .32	28.4 1.8	39.30 .44	45.2 1.4	36.90 .55	34.1 0.9	10.35 .33	63.1 1.8
30.7	35.93 .31	26.8 1.4	39.74 .44	44.1 0.8	37.45 .54	35.3 1.4	10.68 .33	61.5 1.4
Feb. 9.7	36.24 .29	25.7 1.0	40.17 .42	43.7 −0.2	37.99 .52	36.8 1.7	11.01 .32	60.3 0.9
19.7	36.52 .27	24.9 0.5	40.58 .39	43.8 +0.5	38.49 .48	38.7 2.0	11.32 .30	59.7 −0.4
Mar. 1.7	36.78 .24	24.6 −0.1	40.95 .35	44.6 1.1	38.96 .44	40.9 2.3	11.60 .27	59.6 +0.1
11.6	37.00 .21	24.8 +0.2	41.28 .30	45.9 1.6	39.37 .39	43.4 2.5	11.86 .24	60.0 0.6
21.6	37.19 .17	25.3 0.7	41.55 .25	47.8 2.1	39.74 .34	46.0 2.7	12.08 .21	60.8 1.1
31.6	37.34 .14	26.2 1.0	41.77 .19	50.0 2.4	40.05 .28	48.7 2.7	12.27 .17	62.1 1.4
April 10.5	37.46 .10	27.4 1.3	41.93 .13	52.6 2.7	40.30 .22	51.5 2.8	12.42 .13	63.7 1.7
20.5	37.54 .07	28.8 1.5	42.04 .07	55.4 2.8	40.50 .16	54.2 2.8	12.54 .10	65.5 1.9
30.5	37.60 .04	30.4 1.6	42.08 +.02	58.3 2.9	40.63 .10	57.0 2.7	12.62 .06	67.6 2.1
May 10.5	37.62 +.01	32.1 1.7	42.07 −.04	61.2 2.8	40.70 +.04	59.6 2.5	12.67 +.03	69.7 2.1
20.4	37.61 −.02	33.7 1.6	42.01 .09	63.9 2.7	40.71 −.02	62.1 2.4	12.68 .00	71.9 2.1
30.4	37.57 .05	35.3 1.6	41.90 .13	66.5 2.4	40.66 .08	64.3 2.1	12.66 −.03	73.9 2.0
June 9.4	37.51 .07	36.8 1.4	41.75 .17	68.8 2.1	40.55 .14	66.3 1.9	12.61 .06	75.9 1.9
19.4	37.43 .09	38.2 1.3	41.56 .20	70.8 1.8	40.39 .19	68.0 1.6	12.53 .09	77.7 1.7
29.3	37.32 .11	39.4 1.1	41.34 .23	72.3 1.4	40.17 .24	69.4 1.2	12.43 .11	79.2 1.4
July 9.3	37.20 .13	40.3 0.8	41.09 .26	73.5 0.9	39.90 .28	70.4 0.8	12.30 .14	80.5 1.1
19.3	37.06 .14	41.0 0.6	40.82 .27	74.2 +0.4	39.60 .32	71.0 +0.4	12.15 .15	81.4 0.8
29.2	36.92 .15	41.5 +0.3	40.54 .28	74.4 −0.1	39.27 .35	71.1 −0.1	11.99 .17	82.1 0.5
Aug. 8.2	36.76 .15	41.6 0.0	40.26 .29	74.1 0.5	38.91 .36	70.8 0.5	11.82 .18	82.4 +0.1
18.2	36.61 .16	41.5 −0.3	39.97 .28	73.3 1.0	38.55 .35	70.1 0.9	11.64 .18	82.3 −0.2
28.2	36.46 .14	41.1 0.6	39.70 .27	72.0 1.5	38.20 .34	68.9 1.3	11.46 .17	81.9 0.6
Sept. 7.1	36.32 .13	40.4 0.9	39.44 .24	70.4 1.9	37.87 .31	67.4 1.7	11.29 .16	81.1 1.0
17.1	36.20 .11	39.4 1.2	39.21 .21	68.2 2.3	37.58 .26	65.5 2.0	11.14 .14	80.0 1.3
27.1	36.11 .08	38.1 1.5	39.02 .17	65.7 2.7	37.35 .20	63.4 2.2	11.01 .11	78.5 1.6
Oct. 7.1	36.05 −.04	36.4 1.7	38.88 .12	62.9 3.0	37.18 .13	61.0 2.4	10.92 .08	76.7 2.0
17.0	36.03 +.01	34.6 2.0	38.79 −.06	59.7 3.3	37.09 −.04	58.6 2.4	10.86 −.03	74.6 2.3
27.0	36.06 .06	32.4 2.2	38.77 +.01	56.3 3.5	37.09 +.05	56.2 2.4	10.85 +.02	72.2 2.5
Nov. 6.0	36.13 .10	30.1 2.4	38.81 .08	52.7 3.6	37.19 .14	53.9 2.2	10.89 .07	69.6 2.7
15.9	36.26 .16	27.6 2.6	38.93 .15	49.1 3.6	37.38 .23	51.8 2.0	10.98 .12	66.8 2.9
25.9	36.43 .20	24.9 2.7	39.11 .22	45.5 3.6	37.65 .32	50.0 1.6	11.13 .17	63.8 3.0
Dec. 5.9	36.65 .24	22.2 2.7	39.36 .28	41.9 3.4	38.01 .39	48.5 1.2	11.32 .22	60.9 3.0
15.9	36.91 .28	19.5 2.6	39.67 .34	38.6 3.2	38.44 .46	47.5 0.8	11.57 .26	57.9 2.9
25.8	37.20 .30	16.8 2.5	40.04 .38	35.6 2.8	38.93 .51	46.9 −0.3	11.85 .29	55.1 2.7
35.8	37.51 +.32	14.4 −2.3	40.45 +.42	33.0 −2.3	39.46 +.54	46.9 +0.3	12.15 +.31	52.5 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α² Libræ.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$14^{h}\ 43^{m}$	$15^{\circ}\ 29'$	$14^{h}\ 56^{m}$	$40^{\circ}\ 54'$	$15^{h}\ 9^{m}$	$8^{\circ}\ 53'$	$15^{h}\ 19^{m}$	$37^{\circ}\ 50'$
	s	"	s	"	s	"	s	"
Jan. 0.8	30.88 +·31	3.4 +1·5	54.74 +·33	53.4 −2·8	50.39 +·29	16.0 +1·6	26.58 +·30	39.1 −2·8
10.8	31.20 ·32	4.9 1·6	55.08 ·35	50.9 2·4	50.69 ·30	17.7 1·6	26.89 ·33	36.4 2·5
20.8	31.52 ·32	6.5 1·6	55.44 ·36	48.7 1·9	51.00 ·31	19.3 1·6	27.23 ·34	34.1 2·1
30.8	31.84 ·32	8.1 1·6	55.81 ·37	47.1 1·3	51.31 ·31	20.9 1·5	27.58 ·35	32.3 1·6
Feb. 9.7	32.16 ·31	9.7 1·5	56.17 ·36	46.0 0·8	51.62 ·30	22.3 1·4	27.93 ·35	31.0 1·0
19.7	32.46 ·29	11.2 1·4	56.53 ·34	45.6 −0·2	51.92 ·29	23.6 1·2	28.28 ·34	30.3 −0·4
Mar. 1.7	32.73 ·26	12.6 1·3	56.86 ·32	45.7 +0·4	52.20 ·27	24.7 1·0	28.61 ·32	30.1 +0·2
11.7	32.98 ·23	13.8 1·1	57.16 ·29	46.4 1·0	52.46 ·26	25.6 0·8	28.91 ·29	30.6 0·7
21.6	33.20 ·21	14.8 0·9	57.43 ·25	47.6 1·5	52.70 ·22	26.3 0·6	29.19 ·26	31.6 1·2
31.6	33.39 ·16	15.6 0·8	57.66 ·21	49.3 1·9	52.90 ·19	26.8 0·3	29.43 ·22	33.1 1·7
April 10.6	33.55 ·15	16.3 0·6	57.84 ·16	51.4 2·2	53.08 ·17	27.0 +0·1	29.63 ·18	35.0 2·1
20.5	33.69 ·12	16.8 0·4	57.98 ·12	53.8 2·5	53.24 ·14	27.1 0·0	29.80 ·14	37.2 2·3
30.5	33.79 ·09	17.1 0·3	58.08 ·06	56.4 2·6	53.36 ·11	26.9 −0·2	29.92 ·10	39.7 2·5
May 10.5	33.86 ·06	17.3 +0·1	58.13 +·03	59.1 2·7	53.46 ·08	26.7 0·3	30.01 ·06	42.3 2·6
20.5	33.91 +·03	17.4 0·0	58.15 −·01	61.7 2·6	53.53 ·06	26.3 0·4	30.05 +·02	44.9 2·6
30.4	33.93 ·00	17.4 −0·1	58.12 ·06	64.3 2·5	53.57 +·02	25.9 0·5	30.05 −·02	47.5 2·5
June 9.4	33.91 −·02	17.2 0·2	58.06 ·08	66.7 2·3	53.58 −·01	25.4 0·5	30.01 ·05	50.0 2·4
19.4	33.88 ·05	17.0 0·2	57.95 ·12	68.9 2·0	53.56 ·03	24.9 0·5	29.94 ·09	52.3 2·1
29.4	33.81 ·06	16.8 0·3	57.82 ·15	70.7 1·7	53.51 ·06	24.3 0·5	29.84 ·12	54.3 1·9
July 9.3	33.72 ·10	16.4 0·4	57.66 ·18	72.3 1·3	53.43 ·08	23.8 0·5	29.70 ·15	56.0 1·6
19.3	33.61 ·12	16.0 0·4	57.47 ·20	73.4 0·9	53.33 ·11	23.3 0·5	29.53 ·18	57.3 1·2
29.3	33.48 ·14	15.5 0·5	57.26 ·21	74.1 0·5	53.21 ·13	22.8 0·5	29.34 ·20	58.3 0·8
Aug. 8.2	33.33 ·15	15.0 0·5	57.04 ·23	74.4 +0·1	53.07 ·15	22.3 0·5	29.13 ·22	58.8 +0·3
18.2	33.18 ·15	14.5 0·6	56.81 ·23	74.3 −0·4	52.92 ·16	21.8 0·4	28.91 ·22	59.0 −0·1
28.2	33.02 ·15	13.9 0·6	56.58 ·23	73.7 0·8	52.76 ·16	21.4 0·4	28.68 ·23	58.7 0·5
Sept. 7.2	32.88 ·14	13.3 0·5	56.36 ·21	72.7 1·2	52.61 ·15	21.1 0·3	28.46 ·22	57.9 1·0
17.1	32.74 ·12	12.8 0·5	56.15 ·19	71.2 1·6	52.46 ·13	20.8 0·2	28.25 ·20	56.8 1·4
27.1	32.64 ·09	12.3 0·4	55.97 ·16	69.4 2·0	52.34 ·11	20.7 −0·1	28.06 ·18	55.2 1·8
Oct. 7.1	32.56 ·06	12.0 0·3	55.83 ·12	67.2 2·4	52.24 ·08	20.7 +0·1	27.89 ·14	53.2 2·1
17.1	32.52 −·02	11.8 −0·1	55.72 ·08	64.6 2·7	52.18 −·04	20.8 0·3	27.78 ·10	50.9 2·5
27.0	32.53 +·03	11.8 +0·1	55.67 −·03	61.7 3·0	52.16 +·01	21.2 0·4	27.70 −·05	48.3 2·8
Nov. 6.0	32.59 ·09	11.9 0·3	55.67 +·03	58.6 3·2	52.19 ·05	21.7 0·6	27.68 +·01	45.3 3·0
16.0	32.70 ·14	12.4 0·5	55.74 ·09	55.3 3·3	52.27 ·10	22.5 0·9	27.72 ·06	42.2 3·2
25.9	32.86 ·18	13.0 0·8	55.86 ·15	51.9 3·4	52.40 ·15	23.5 1·1	27.81 ·12	38.9 3·3
Dec. 5.9	33.07 ·23	13.9 1·0	56.04 ·21	48.5 3·4	52.58 ·20	24.7 1·3	27.96 ·16	35.6 3·3
15.9	33.32 ·27	15.1 1·2	56.28 ·26	45.1 3·2	52.80 ·24	26.0 1·4	28.17 ·23	32.3 3·2
25.9	33.60 ·30	16.4 1·4	56.56 ·30	42.0 3·0	53.06 ·27	27.5 1·6	28.42 ·28	29.1 3·1
35.8	33.91 +·32	17.9 +1·5	56.89 +·34	39.2 −2·6	53.34 +·30	29.2 +1·7	28.72 +·31	26.2 −2·8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Coronæ Borealis.		α Serpentis		ε Serpentis.		ε Coronæ Borealis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 15 29	° ' 27 9	h m 15 37	° ' 6 50	h m 15 44	° ' 4 52	h m 15 52	° ' 27 15
	s	"	s	"	s	"	s	"
Jan. 0.9	2.19 +.27	51.4 −2.7	42.07 +.26	51.6 −2.1	10.26 +.26	54.0 −2.1	3.66 +.26	54.1 −2.6
10.8	2.48 .30	48.8 2.4	42.34 .28	49.5 2.0	10.53 .28	51.9 2.0	3.93 .29	51.4 2.5
20.8	2.79 .32	46.5 2.1	42.63 .30	47.5 1.8	10.82 .29	50.0 1.8	4.23 .31	49.0 2.2
30.8	3.12 .32	44.6 1.7	42.94 .30	45.8 1.6	11.12 .30	48.4 1.6	4.54 .32	47.0 1.8
Feb. 9.8	3.44 .32	43.2 1.2	43.24 .30	44.3 1.3	11.42 .30	46.9 1.3	4.86 .32	45.5 1.3
19.7	3.76 .31	42.3 0.7	43.54 .29	43.2 1.0	11.72 .29	45.7 1.0	5.18 .31	44.4 0.8
Mar. 1.7	4.06 .29	41.8 −0.1	43.82 .28	42.4 0.6	12.00 .28	44.9 0.7	5.49 .30	43.8 −0.3
11.7	4.34 .27	42.0 +0.4	44.09 .26	41.9 −0.3	12.27 .26	44.4 −0.3	5.78 .28	43.8 +0.2
21.7	4.60 .24	42.6 0.8	44.34 .24	41.9 +0.1	12.52 .24	44.3 0.0	6.05 .26	44.3 0.7
31.6	4.83 .21	43.6 1.3	44.56 .21	42.2 0.4	12.75 .21	44.5 +0.4	6.30 .23	45.3 1.2
April 10.6	5.03 .18	45.1 1.6	44.76 .18	42.7 0.7	12.95 .19	45.0 0.6	6.52 .20	46.7 1.6
20.6	5.20 .15	46.9 1.9	44.93 .16	43.6 0.9	13.13 .16	45.7 0.8	6.71 .17	48.4 1.9
30.5	5.33 .11	48.9 2.1	45.07 .13	44.6 1.1	13.28 .14	46.6 1.0	6.86 .14	50.5 2.1
May 10.5	5.43 .08	51.1 2.2	45.19 .10	45.8 1.3	13.40 .11	47.8 1.2	6.98 .11	52.7 2.3
20.5	5.49 .05	53.4 2.3	45.27 .07	47.1 1.3	13.49 .08	49.0 1.3	7.07 .07	55.0 2.3
30.5	5.52 +.01	55.6 2.2	45.33 .04	48.5 1.4	13.55 .05	50.3 1.3	7.12 +.03	57.3 2.3
June 9.4	5.51 −.02	57.8 2.1	45.35 +.01	49.8 1.3	13.59 +.02	51.5 1.3	7.14 .00	59.6 2.2
19.4	5.48 .06	59.8 1.9	45.34 −.02	51.2 1.3	13.59 −.01	52.8 1.2	7.12 −.04	61.8 2.1
29.4	5.40 .09	61.7 1.7	45.31 .05	52.4 1.2	13.56 .05	54.0 1.1	7.06 .07	63.8 1.9
July 9.4	5.30 .12	63.3 1.5	45.24 .08	53.5 1.0	13.49 .08	55.0 1.0	6.97 .10	65.5 1.6
19.3	5.17 .14	64.6 1.2	45.15 .11	54.5 0.9	13.41 .10	56.0 0.8	6.85 .13	67.0 1.3
29.3	5.02 .16	65.6 0.8	45.03 .13	55.3 0.7	13.29 .13	56.7 0.7	6.71 .16	68.2 1.0
Aug. 8.3	4.85 .18	66.3 0.5	44.89 .15	55.9 0.5	13.15 .15	57.4 0.6	6.54 .18	69.0 0.7
18.2	4.66 .19	66.6 +0.1	44.73 .16	56.4 0.3	13.00 .16	57.8 0.4	6.35 .20	69.5 +0.3
28.2	4.47 .19	66.5 −0.2	44.57 .17	56.6 +0.1	12.84 .17	58.1 +0.2	6.15 .20	69.6 −0.1
Sept. 7.2	4.27 .19	66.1 0.6	44.40 .16	56.6 −0.1	12.67 .17	58.2 0.0	5.94 .20	69.4 0.4
17.2	4.09 .18	65.3 1.0	44.24 .15	56.4 0.3	12.51 .16	58.1 −0.2	5.75 .19	68.8 0.8
27.1	3.92 .15	64.2 1.3	44.10 .13	56.0 0.5	12.36 .14	57.7 0.5	5.56 .17	67.7 1.2
Oct. 7.1	3.78 .12	62.6 1.7	43.97 .11	55.4 0.8	12.23 .11	57.2 0.7	5.40 .14	66.4 1.6
17.1	3.67 .09	60.8 2.0	43.88 .07	54.4 1.0	12.14 .07	56.4 0.9	5.28 .11	64.6 1.9
27.1	3.61 −.04	58.6 2.3	43.83 −.03	53.3 1.3	12.09 −.03	55.3 1.1	5.19 .07	62.6 2.2
Nov. 6.0	3.59 +.01	56.1 2.6	43.83 +.02	51.9 1.5	12.08 +.01	54.0 1.4	5.15 −.02	60.2 2.5
16.0	3.63 .06	53.5 2.8	43.87 .07	50.2 1.7	12.11 .06	52.5 1.6	5.16 +.04	57.6 2.7
26.0	3.72 .12	50.6 2.9	43.97 .12	48.4 1.9	12.20 .11	50.8 1.8	5.22 .08	54.7 2.9
Dec. 5.9	3.86 .17	47.6 3.0	44.11 .16	46.4 2.1	12.34 .16	48.9 1.9	5.34 .14	51.8 3.0
15.9	4.05 .21	44.6 3.0	44.30 .21	44.3 2.2	12.52 .20	46.9 2.0	5.50 .19	48.8 3.0
25.9	4.29 .25	41.7 2.9	44.52 .24	42.1 2.2	12.74 .24	44.8 2.1	5.72 .22	45.8 2.9
35.9	4.56 +.29	38.9 −2.6	44.78 +.27	40.0 −2.1	13.00 +.27	42.8 −2.0	5.97 +.26	43.0 −2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Scorpii.		β¹ Scorpii.		δ Ophiuchi.		τ Herculis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 15 52	° ′ 22 14	h m 15 57	° ′ 19 26	h m 16 7	° ′ 3 20	h m 16 15	° ′ 46 37
	s	″	s	″	s	″	s	″
Jan. 0.9	27.42 +.28	13.6 +0.8	41.37 +.28	8.1 +0.9	21.59 +.25	50.5 +1.6	42.62 +.26	52.1 −3.2
10.9	27.71 .30	14.5 1.0	41.65 .30	9.1 1.0	21.85 .27	52.1 1.6	42.90 .31	49.0 2.9
20.8	28.03 .32	15.5 1.1	41.96 .31	10.2 1.1	22.13 .29	53.8 1.6	43.23 .34	46.3 2.6
30.8	28.35 .33	16.6 1.1	42.28 .32	11.3 1.1	22.42 .30	55.3 1.4	43.58 .36	44.0 2.0
Feb. 9.8	28.63 .33	17.7 1.1	42.60 .32	12.4 1.1	22.72 .30	56.6 1.3	43.95 .38	42.3 1.4
19.8	29.00 .32	18.8 1.1	42.92 .31	13.5 1.1	23.02 .29	57.8 1.0	44.33 .38	41.2 0.8
Mar. 1.7	29.31 .31	19.9 1.1	43.23 .30	14.6 1.0	23.31 .29	58.7 0.8	44.71 .37	40.7 −0.2
11.7	29.61 .29	20.9 1.0	43.52 .28	15.5 0.9	23.59 .27	59.3 0.5	45.08 .36	40.8 +0.5
21.7	29.89 .27	21.9 0.9	43.79 .27	16.3 0.8	23.86 .26	59.7 +0.2	45.43 .33	41.6 1.0
31.6	30.15 .24	22.7 0.8	44.05 .24	16.0 0.6	24.10 .23	59.8 0.0	45.74 .30	42.9 1.6
April 10.6	30.38 .22	23.4 0.6	44.28 .22	17.6 0.5	24.32 .21	59.6 −0.3	46.03 .26	44.8 2.1
20.6	30.58 .19	24.0 0.6	44.49 .19	18.0 0.4	24.52 .19	59.2 0.5	46.27 .22	47.0 2.4
30.6	30.76 .17	24.5 0.5	44.67 .17	18.3 0.3	24.70 .16	58.6 0.6	46.47 .16	49.6 2.7
May 10.5	30.91 .13	24.9 0.4	44.82 .14	18.6 0.2	24.84 .13	57.9 0.8	46.62 .13	52.5 2.9
20.5	31.03 .10	25.2 0.3	44.94 .11	18.7 0.1	24.96 .10	57.1 0.8	46.73 .08	55.5 3.0
30.5	31.12 .07	25.5 0.2	45.03 .07	18.8 +0.1	25.05 .07	56.3 0.9	46.78 +.03	58.5 3.0
June 9.5	31.17 +.04	25.7 0.2	45.09 .04	18.8 0.0	25.11 .04	55.4 0.9	46.79 −.02	61.4 2.9
19.4	31.19 .00	25.8 0.1	45.11 +.01	18.8 0.0	25.13 +.01	54.5 0.9	46.75 .07	64.2 2.7
29.4	31.17 −.04	25.9 +0.1	45.10 −.03	18.8 0.0	25.12 −.02	53.6 0.8	46.66 .11	66.8 2.4
July 9.4	31.12 .07	25.9 0.0	45.05 .06	18.7 −0.1	25.08 .06	52.8 0.8	46.52 .15	69.1 2.1
19.3	31.04 .10	25.9 −0.1	44.98 .10	18.5 0.2	25.01 .09	52.1 0.7	46.35 .19	71.1 1.8
29.3	30.92 .13	25.8 0.2	44.86 .12	18.3 0.2	24.91 .12	51.5 0.6	46.13 .23	72.6 1.3
Aug. 8.3	30.78 .15	25.6 0.3	44.73 .15	18.1 0.3	24.78 .14	50.9 0.5	45.89 .26	73.7 0.9
18.3	30.62 .17	25.3 0.3	44.57 .17	17.8 0.3	24.63 .16	50.5 0.4	45.62 .28	74.4 +0.4
28.2	30.44 .18	24.9 0.4	44.40 .17	17.5 0.4	24.47 .17	50.2 0.3	45.33 .29	74.6 0.0
Sept. 7.2	30.27 .18	24.5 0.5	44.22 .18	17.1 0.4	24.30 .17	50.0 −0.1	45.04 .29	74.3 −0.5
17.2	30.09 .17	24.0 0.5	44.05 .17	16.7 0.4	24.13 .16	49.9 0.0	44.75 .28	73.5 1.0
27.2	29.93 .15	23.5 0.5	43.89 .15	16.3 0.4	23.97 .15	49.9 +0.2	44.47 .26	72.3 1.5
Oct. 7.1	29.80 .12	23.0 0.5	43.75 .12	15.9 0.4	23.83 .12	50.2 0.3	44.22 .23	70.6 1.9
17.1	29.69 .08	22.5 0.4	43.65 .08	15.6 0.3	23.72 .09	50.6 0.5	44.01 .19	68.5 2.3
27.1	29.64 −.03	22.1 0.3	43.59 −.04	15.3 −0.2	23.65 −.05	51.1 0.7	43.83 .15	65.9 2.7
Nov. 6.0	29.63 +.02	21.9 0.2	43.57 +.01	15.2 0.0	23.63 .00	51.9 0.9	43.71 .09	63.0 3.0
16.0	29.67 .07	21.7 −0.1	43.61 .06	15.2 +0.1	23.65 +.07	52.9 1.1	43.66 −.03	59.9 3.3
26.0	29.77 .12	21.8 +0.1	43.70 .12	15.4 0.3	23.72 .10	54.1 1.3	43.66 +.04	56.5 3.5
Dec. 6.0	29.92 .17	22.0 0.3	43.85 .17	15.8 0.5	23.84 .14	55.4 1.4	43.74 .11	52.9 3.6
15.9	30.12 .22	22.4 0.5	44.04 .21	16.4 0.7	24.00 .19	56.9 1.6	43.87 .17	49.4 3.5
25.9	30.36 .26	23.1 0.7	44.27 .25	17.2 0.9	24.21 .23	58.6 1.6	44.07 .23	45.9 3.4
35.9	30.64 +.29	23.9 +0.9	44.54 +.28	18.1 +1.0	24.46 +.26	60.2 +1.6	44.32 +.28	42.6 −3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (*Antares.*)				η Draconis.				ζ Ophiuchi.				η Herculis			
	Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	h m 16 21		° ′ 26 7		h m 16 22		° ′ 61 48		h m 16 29		° ′ 10 17		h m 16 38		° ′ 39 10	
	s		″		s		″		s		″		s		″	
Jan. 0.9	14.23	+.27	48.6	+0.4	9.43	+.31	55.8	−3.5	49.13	+.24	32.5	+1.2	18.52	+.22	38.5	−3.2
10.9	14.56	.29	49.1	0.6	9.77	.38	52.5	3.0	49.38	.26	33.8	1.3	18.76	.26	35.4	2.9
20.8	14.87	.31	49.8	0.7	10.18	.44	49.7	2.6	49.66	.28	35.0	1.3	19.05	.30	32.7	2.6
30.8	15.19	.33	50.5	0.8	10.65	.48	47.4	2.0	49.95	.30	36.3	1.2	19.36	.32	30.3	2.1
Feb. 9.8	15.52	.33	51.4	0.9	11.14	.51	45.7	1.4	50.25	.30	37.4	1.1	19.69	.34	28.4	1.6
19.8	15.85	.33	52.2	0.9	11.66	.52	44.6	0.7	50.55	.30	38.4	0.9	20.03	.34	27.0	1.1
Mar. 1.7	16.18	.32	53.1	0.9	12.18	.51	44.2	−0.1	50.85	.29	39.3	0.7	20.38	.34	26.2	−0.5
11.7	16.50	.31	54.0	0.8	12.69	.49	44.5	+0.6	51.14	.28	39.9	0.5	20.71	.33	26.1	+0.1
21.7	16.80	.29	54.8	0.8	13.17	.46	45.4	1.2	51.42	.27	40.4	0.4	21.03	.31	26.5	0.7
31.7	17.08	.27	55.5	0.7	13.61	.42	46.9	1.8	51.68	.25	40.6	+0.1	21.34	.29	27.6	1.3
April 10.6	17.34	.25	56.2	0.7	14.00	.36	49.0	2.3	51.92	.23	40.7	0.0	21.61	.26	29.1	1.7
20.6	17.58	.22	56.8	0.6	14.33	.30	51.5	2.7	52.14	.21	40.5	−0.2	21.86	.23	31.1	2.2
30.6	17.79	.20	57.4	0.5	14.59	.23	54.3	3.0	52.34	.19	40.3	0.3	22.07	.19	33.4	2.5
May 10.5	17.98	.17	57.9	0.5	14.78	.15	57.4	3.2	52.51	.16	39.8	0.4	22.25	.15	36.0	2.7
20.5	18.13	.14	58.4	0.4	14.90	+.08	60.7	3.3	52.66	.13	39.4	0.5	22.38	.11	38.8	2.8
30.5	18.25	.10	58.8	0.4	14.94	.00	63.9	3.2	52.77	.10	38.8	0.6	22.47	.07	41.6	2.9
June 9.5	18.33	.07	59.2	0.4	14.91	−.07	67.1	3.1	52.86	.06	38.3	0.6	22.52	+.02	44.5	2.8
19.4	18.38	+.03	59.6	0.3	14.80	.14	70.1	2.9	52.91	+.03	37.7	0.6	22.52	−.02	47.2	2.7
29.4	18.39	−.01	59.9	0.3	14.62	.21	72.9	2.6	52.92	.00	37.2	0.5	22.48	.06	49.8	2.5
July 9.4	18.36	.05	60.1	0.2	14.38	.27	75.3	2.3	52.90	−.04	36.7	0.5	22.39	.10	52.2	2.2
19.4	18.29	.09	60.3	0.1	14.08	.33	77.4	1.9	52.84	.07	36.2	0.5	22.27	.14	54.2	1.9
29.3	18.19	.12	60.4	+0.1	13.73	.37	79.0	1.4	52.75	.11	35.7	0.4	22.10	.18	55.9	1.5
Aug. 8.3	18.05	.15	60.4	−0.1	13.33	.41	80.2	0.9	52.63	.13	35.4	0.4	21.91	.21	57.2	1.1
18.3	17.89	.17	60.3	0.2	12.91	.44	80.9	+0.4	52.48	.15	35.0	0.3	21.68	.23	58.2	0.7
28.2	17.71	.19	60.1	0.3	12.46	.45	81.0	−0.1	52.32	.17	34.7	0.3	21.44	.26	58.6	+0.3
Sept. 7.2	17.52	.19	59.8	0.4	12.00	.46	80.7	0.6	52.15	.17	34.5	0.2	21.19	.26	58.7	−0.2
17.2	17.33	.18	59.4	0.4	11.55	.44	79.8	1.1	51.97	.17	34.3	0.1	20.93	.25	58.3	0.6
27.2	17.15	.17	58.9	0.5	11.11	.41	78.4	1.6	51.80	.16	34.2	−0.1	20.68	.24	57.4	1.1
Oct. 7.1	16.99	.14	58.4	0.6	10.71	.38	76.5	2.1	51.65	.13	34.2	0.0	20.45	.22	56.1	1.5
17.1	16.87	.11	57.8	0.6	10.35	.33	74.2	2.6	51.53	.11	34.3	+0.2	20.25	.18	54.3	2.0
27.1	16.78	.06	57.3	0.5	10.06	.30	71.4	2.9	51.44	.07	34.5	0.3	20.08	.14	52.1	2.4
Nov. 6.1	16.74	−.01	56.8	0.4	9.83	.19	68.3	3.3	51.40	−.02	34.9	0.5	19.97	.09	49.6	2.7
16.0	16.76	+.04	56.4	0.3	9.69	.10	64.9	3.5	51.40	+.03	35.4	0.6	19.90	−.04	46.8	3.0
26.0	16.83	.10	56.1	−0.2	9.63	−.01	61.2	3.7	51.46	.08	36.1	0.8	19.89	+.02	43.7	3.2
Dec. 6.0	16.95	.15	56.0	0.0	9.67	+.08	57.5	3.7	51.56	.13	37.0	0.9	19.94	.08	40.4	3.3
15.9	17.13	.20	56.1	+0.2	9.79	.17	53.7	3.7	51.71	.17	38.0	1.1	20.05	.14	37.0	3.4
25.9	17.35	.24	56.4	0.4	10.01	.26	50.1	3.6	51.91	.21	39.1	1.2	20.22	.19	33.7	3.3
35.9	17.62	+.28	56.8	+0.5	10.31	+.34	46.6	−3.3	52.14	+.25	40.4	+1.3	20.44	+.24	30.4	−3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	κ Ophiuchi.		d Herculis.		a^1 Herculis.		b Ophiuchi (44).	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 51	° ′ 9 34	h m 16 56	° ′ 33 45	h m 17 8	° ′ 14 32	h m 17 18	° ′ 24 2
	s	″	s	″	s	″	s	″
Jan. 0.9	21.13 +.20	69.0 −2.2	40.05 +.19	49.2 −3.1	33.67 +.18	46.1 −2.4	13.61 +.22	48.2 +0.2
10.9	21.35 .23	66.9 2.1	40.27 .24	46.2 2.9	33.88 .22	43.8 2.3	13.84 .25	48.5 0.3
20.9	21.60 .26	64.9 1.9	40.53 .27	43.5 2.6	34.11 .25	41.6 2.1	14.10 .27	48.9 0.4
30.8	21.87 .27	63.1 1.7	40.82 .30	41.1 2.2	34.37 .27	39.6 1.8	14.39 .30	49.3 0.4
Feb. 9.8	22.15 .29	61.6 1.4	41.12 .31	39.1 1.7	34.65 .28	38.0 1.5	14.69 .31	49.8 0.5
19.8	22.44 .29	60.3 1.0	41.44 .32	37.7 1.2	34.93 .29	36.6 1.1	15.01 .32	50.3 0.5
Mar. 1.8	22.73 .29	59.5 0.7	41.76 .32	36.7 0.6	35.22 .29	35.7 0.7	15.33 .32	50.7 0.4
11.7	23.01 .28	59.0 −0.3	42.09 .32	36.4 −0.1	35.51 .29	35.2 −0.3	15.64 .32	51.1 0.4
21.7	23.29 .27	58.9 +0.1	42.40 .30	36.6 +0.5	35.80 .28	35.2 +0.2	15.96 .31	51.5 0.3
31.7	23.55 .25	59.3 0.5	42.69 .29	37.4 1.0	36.07 .26	35.6 0.6	16.26 .30	51.8 0.3
April 10.7	23.80 .24	59.9 0.8	42.97 .26	38.7 1.5	36.32 .25	36.4 1.0	16.55 .28	52.0 0.2
20.6	24.02 .22	60.9 1.1	43.22 .24	40.5 1.9	36.56 .23	37.5 1.3	16.83 .27	52.2 0.2
30.6	24.23 .19	62.2 1.4	43.44 .20	42.6 2.3	36.78 .21	39.0 1.6	17.08 .25	52.3 0.1
May 10.6	24.41 .17	63.6 1.5	43.63 .17	45.0 2.5	36.97 .18	40.7 1.8	17.32 .22	52.4 0.1
20.5	24.56 .14	65.2 1.6	43.78 .13	47.6 2.7	37.14 .15	42.5 1.9	17.52 .19	52.5 0.1
30.5	24.68 .10	66.9 1.7	43.89 .09	50.3 2.7	37.27 .12	44.5 2.0	17.70 .16	52.6 0.1
June 9.5	24.77 .07	68.6 1.7	43.97 .05	53.0 2.7	37.37 .08	46.5 2.0	17.84 .12	52.8 0.1
19.5	24.82 +.04	70.3 1.6	44.00 +.01	55.7 2.6	37.44 .05	48.4 1.9	17.94 .08	52.9 0.1
29.4	24.84 .00	71.8 1.5	43.99 −.03	58.2 2.4	37.47 +.01	50,3 1.8	18.00 +.04	53.0 0.2
July 9.4	24.82 −.04	73.3 1.4	43.94 .07	60.6 2.2	37.45 −.03	52.1 1.7	18.02 .00	53.2 0.2
19.4	24.76 .07	74.6 1.2	43.84 .11	62.7 1.9	37.41 .07	53.6 1.5	18.00 −.04	53.4 0.2
29.4	24.67 .11	75.8 1.0	43.71 .15	64.5 1.6	37.32 .10	55.0 1.2	17.94 .08	53.6 0.2
Aug. 8.3	24.55 .13	76.7 0.8	43.54 .18	65.9 1.2	37.20 .13	56.1 1.0	17.84 .12	53.7 0.1
18.3	24.41 .16	77.4 0.6	43.34 .21	67.0 0.9	37.06 .16	57.0 0.7	17.70 .15	53.8 +0.1
28.3	24.24 .17	77.9 0.4	43.13 .23	67.6 +0.5	36.89 .18	57.6 0.5	17.54 .17	53.8 0.0
Sept. 7.2	24.06 .18	78.1 +0.1	42.89 .24	67.9 0.0	36.70 .19	57.9 +0.2	17.35 .19	53.8 −0.1
17.2	23.87 .18	78.1 −0.1	42.65 .24	67.7 −0.4	36.51 .19	58.0 −0.1	17.16 .19	53.7 0.1
27.2	23.69 .17	77.8 0.4	42.42 .23	67.1 0.8	36.32 .19	57.7 0.4	16.96 .19	53.5 0.2
Oct. 7.2	23.52 .16	77.3 0.7	42.20 .21	66.0 1.2	36.14 .17	57.1 0.7	16.78 .17	53.3 0.3
17.1	23.37 .13	76.5 0.9	42.00 .18	64.6 1.7	35.98 .15	56.2 1.0	16.62 .14	53.0 0.3
27.1	23.26 .09	75.5 1.2	41.84 .14	62.7 2.0	35.85 .11	55.1 1.3	16.49 .11	52.7 0.3
Nov. 6.1	23.19 .05	74.1 1.4	41.72 .10	60.5 2.4	35.75 .07	53.6 1.6	16.40 .06	52.5 0.3
16.1	23.16 −.01	72.6 1.7	41.65 −.05	57.9 2.7	35.70 −.03	51.9 1.9	16.36 −.02	52.2 0.2
26.0	23.18 +.04	70.8 1.9	41,63 +.01	55.1 2.9	35.70 +.02	49.9 2.1	16.37 +.04	52.0 −0.1
Dec. 6.0	23.24 .09	68.8 2.0	41.66 .06	52.1 3.1	35.75 .07	47.7 2.2	16.44 .09	51.9 0.0
16.0	23.36 .14	66.7 2.1	41.76 .12	48.9 3.2	35.84 .12	45.4 2.3	16.55 .14	51.9 +0.1
25.9	23.52 .18	64.5 2.2	41.90 .17	45.7 3.2	35.98 .16	43.0 2.4	16.72 .19	52.1 0.2
35.9	23.72 +.21	62.4 −2.1	42.09 +.21	42.6 −3.0	36.16 +.20	40.6 −2.4	16.93 +.23	52.3 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Draconis.		α Ophiuchi.		μ Herculis.		γ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 17 27	° ′ 52 23	h m 17 28	° ′ 12 39	h m 17 41	° ′ 24 47	h m 17 53	° ′ 51 30
	s	″	s	″	s	″	s	″
Jan. 1.0	23.40 +.17	66.9 −3.6	44.30 +.17	41.0 −2.3	13.73 +.15	67.0 −2.9	29.05 +.12	25.9 −3.5
10.9	23.61 .23	63.4 3.3	44.49 .20	38.8 2.2	13.90 .19	64.2 2.8	29.21 .19	22.4 3.4
20.9	23.87 .29	60.2 3.0	44.71 .23	36.7 2.0	14.11 .23	61.5 2.6	29.44 .25	19.1 3.1
30.9	24.18 .33	57.4 2.6	44.96 .26	34.8 1.8	14.35 .26	59.0 2.3	29.71 .30	16.1 2.8
Feb. 9.8	24.53 .37	55.0 2.1	45.22 .27	33.2 1.5	14.61 .28	56.9 1.9	30.03 .34	13.6 2.3
19.8	24.91 .39	53.2 1.5	45.50 .28	31.8 1.1	14.90 .29	55.3 1.4	30.39 .37	11.5 1.8
Mar. 1.8	25.31 .41	52.0 0.9	45.78 .29	30.9 0.7	15.20 .30	54.1 0.9	30.77 .39	10.1 1.2
11.8	25.72 .41	51.5 −0.2	46.07 .29	30.4 −0.3	15.50 .31	53.4 −0.4	31.16 .40	9.2 −0.6
21.7	26.13 .40	51.6 +0.4	46.35 .28	30.2 +0.1	15.80 .30	53.3 +0.2	31.56 .40	9.1 +0.2
31.7	26.52 .38	52.3 1.1	46.63 .27	30.6 0.5	16.10 .29	53.7 0.7	31.96 .39	9.5 0.8
April 10.7	26.89 .36	53.7 1.6	46.89 .26	31.3 0.9	16.38 .28	54.6 1.2	32.34 .37	10.6 1.4
20.7	27.23 .32	55.6 2.1	47.15 .24	32.3 1.2	16.65 .26	56.0 1.6	32.69 .34	12.3 1.9
30.6	27.53 .28	57.9 2.5	47.38 .22	33.7 1.5	16.90 .24	57.8 1.9	33.02 .30	14.4 2.4
May 10.6	27.79 .23	60.6 2.9	47.59 .20	35.3 1.7	17.12 .21	59.9 2.2	33.30 .26	17.0 2.7
20.6	28.00 .18	63.6 3.1	47.77 .17	37.1 1.8	17.32 .18	62.2 2.4	33.54 .21	19.9 3.0
30.5	28.15 .12	66.8 3.2	47.92 .14	39.0 1.9	17.48 .14	64.7 2.6	33.73 .16	23.0 3.2
June 9.5	28.25 +.07	70.0 3.2	48.04 .10	40.9 1.6	17.60 .10	67.3 2.6	33.86 .10	26.2 3.3
19.5	28.28 .00	73.3 3.2	48.13 .07	42.8 1.9	17.69 .06	69.9 2.6	33.94 +.06	29.5 3.2
29.5	28.26 −.05	76.4 3.0	48.18 +.03	44.7 1.8	17.73 +.02	72.4 2.5	33.95 −.01	32.7 3.1
July 9.4	28.17 .11	79.3 2.8	48.19 −.01	46.4 1.7	17.73 −.02	74.8 2.3	33.91 .07	35.8 3.0
19.4	28.03 .17	81.9 2.5	48.16 .06	48.0 1.5	17.68 .06	77.0 2.1	33.80 .13	38.6 2.7
29.4	27.84 .22	84.3 2.1	48.09 .09	49.4 1.3	17.60 .10	78.9 1.8	33.65 .19	41.2 2.4
Aug. 8.4	27.59 .26	86.2 1.7	47.98 .12	50.5 1.0	17.47 .14	80.6 1.5	33.43 .24	43.4 2.0
18.3	27.31 .30	87.7 1.3	47.85 .15	51.5 0.8	17.32 .17	81.9 1.2	33.18 .28	45.2 1.6
28.3	26.99 .33	88.8 0.8	47.69 .17	52.1 0.5	17.13 .20	82.9 0.8	32.88 .31	46.6 1.2
Sept. 7.3	26.65 .35	89.4 +0.3	47.51 .19	52.6 +0.3	16.92 .22	83.5 +0.4	32.55 .34	47.5 0.7
17.2	26.29 .36	89.4 −0.2	47.31 .19	52.7 0.0	16.70 .22	83.7 0.0	32.21 .35	47.9 +0.2
27.2	25.94 .35	89.0 0.7	47.12 .19	52.5 −0.3	16.48 .22	83.5 −0.4	31.86 .35	47.8 −0.3
Oct. 7.2	25.59 .33	88.1 1.2	46.94 .18	52.1 0.6	16.25 .21	83.0 0.8	31.51 .34	47.2 0.9
17.2	25.27 .30	86.6 1.7	46.77 .15	51.3 0.9	16.05 .19	82.0 1.2	31.18 .31	46.1 1.4
27.1	24.99 .26	84.7 2.2	46.63 .12	50.3 1.2	15.87 .16	80.6 1.6	30.88 .28	44.5 1.8
Nov. 6.1	24.75 .21	82.3 2.6	46.52 .08	49.0 1.4	15.73 .12	78.9 1.9	30.62 .23	42.5 2.3
16.1	24.56 .15	79.6 2.9	46.46 −.04	47.4 1.7	15.63 .08	76.8 2.2	30.42 .18	39.9 2.7
26.1	24.45 .08	76.5 3.2	46.44 +.01	45.6 1.9	15.58 −.03	74.4 2.5	30.27 .12	37.0 3.0
Dec. 6.0	24.40 −.02	73.1 3.5	46.47 .05	43.6 2.1	15.57 +.02	71.7 2.7	30.18 −.06	33.8 3.3
16.0	24.42 +.06	69.5 3.6	46.55 .10	41.4 2.2	15.62 .07	68.9 2.9	30.17 +.02	30.4 3.5
26.0	24.51 .13	65.9 3.6	46.67 .14	39.2 2.3	15.72 .12	66.0 2.9	30.22 .09	26.9 3.6
35.9	24.67 +.20	62.4 −3.5	46.83 +.18	36.9 −2.3	15.86 +.16	63.0 −2.9	30.34 +.15	23.3 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		η Serpentis.		1 Aquilæ. (3 H. Scuti Sob.)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 17 57	° ′ 30 25	h m 18 5	° ′ 21 5	h m 18 14	° ′ 2 55	h m 18 27	° ′ 8 19
	s	″	s	″	s	″	s	″
Jan. 1.0	14.34 +.18	10.7 −0.3	47.12 +.16	16.9 +0.2	24.28 +.14	42.7 +1.3	56.72 +.12	56.0 +0.9
10.9	14.55 .22	10.5 0.3	47.30 .20	17.1 0.2	24.44 .17	44.0 1.3	56.86 .16	56.9 0.9
20.9	14.79 .26	10.2 0.2	47.52 .23	17.4 0.3	24.62 .20	45.3 1.2	57.04 .20	57.9 0.9
30.9	15.06 .28	10.1 0.1	47.76 .26	17.6 0.3	24.84 .23	46.5 1.1	57.25 .22	58.7 0.8
Feb. 9.9	15.36 .30	10.0 −0.1	48.03 .28	17.9 0.2	25.08 .26	47.5 1.0	57.49 .24	59.5 0.7
19.8	15.67 .32	10.0 0.0	48.32 .29	18.1 0.2	25.33 .26	48.4 0.8	57.74 .26	60.1 0.5
Mar. 1.8	16.00 .33	10.0 0.0	48.62 .30	18.3 0.1	25.60 .27	49.0 0.5	58.01 .27	60.5 0.3
11.8	16.33 .33	10.0 0.0	48.92 .31	18.4 +0.1	25.88 .28	49.4 +0.2	58.29 .28	60.7 +0.1
21.8	16.66 .33	10.1 +0.1	49.23 .31	18.4 0.0	26.16 .28	49.5 −0.1	58.57 .29	60.7 −0.1
31.7	16.99 .33	10.1 0.1	49.53 .30	18.3 −0.1	26.45 .28	49.3 0.3	58.86 .29	60.5 0.3
April 10.7	17.31 .32	10.2 0.1	49.83 .30	18.1 0.2	26.72 .26	48.9 0.6	59.15 .28	60.1 0.5
20.7	17.63 .30	10.3 0.1	50.13 .29	17.9 0.3	27.00 .27	48.2 0.8	59.43 .28	59.4 0.7
30.6	17.92 .29	10.4 0.1	50.41 .27	17.6 0.3	27.26 .25	47.3 1.0	59.70 .26	58.7 0.8
May 10.6	18.20 .26	10.5 0.2	50.67 .25	17.3 0.3	27.50 .23	46.3 1.1	59.96 .25	57.8 0.9
20.6	18.45 .24	10.7 0.2	50.91 .23	17.0 0.3	27.72 .21	45.1 1.2	60.20 .23	56.8 1.0
30.6	18.67 .21	11.0 0.3	51.12 .20	16.7 0.3	27.92 .19	43.9 1.2	60.41 .20	55.8 1.0
June 9.5	18.86 .17	11.4 0.4	51.31 .17	16.5 0.2	28.09 .15	42.6 1.2	60.60 .17	54.8 1.0
19.5	19.01 .13	11.8 0.4	51.45 .13	16.3 0.2	28.23 .12	41.4 1.2	60.75 .14	53.8 1.0
29.5	19.12 .08	12.2 0.5	51.56 .09	16.2 −0.1	28.33 .08	40.2 1.1	60.87 .10	52.8 0.9
July 9.5	19.18 +.04	12.7 0.5	51.62 +.04	16.2 0.0	28.39 +.04	39.2 1.0	60.95 .06	52.0 0.8
19.4	19.19 −.01	13.3 0.5	51.64 .00	16.2 0.0	28.41 .00	38.2 0.9	60.98 +.01	51.3 0.7
29.4	19.16 .06	13.8 0.5	51.62 −.05	16.2 0.0	28.39 −.04	37.3 0.8	60.98 −.03	50.7 0.5
Aug. 8.4	19.08 .10	14.3 0.5	51.55 .09	16.3 +0.1	28.32 .08	36.6 0.6	60.93 .07	50.2 0.4
18.3	18.96 .14	14.7 0.4	51.45 .12	16.5 0.1	28.22 .12	36.1 0.5	60.84 .11	49.9 0.3
28.3	18.80 .17	15.1 0.3	51.31 .15	16.6 0.1	28.09 .14	35.7 0.3	60.71 .14	49.6 0.2
Sept. 7.3	18.61 .19	15.4 0.2	51.14 .18	16.7 0.1	27.94 .17	35.4 0.2	60.56 .16	49.5 −0.1
17.3	18.41 .21	15.6 +0.1	50.96 .19	16.8 +0.1	27.76 .18	35.3 −0.1	60.39 .18	49.4 0.0
27.2	18.20 .21	15.6 0.0	50.76 .19	16.9 0.0	27.58 .18	35.3 +0.1	60.21 .18	49.5 +0.1
Oct. 7.2	18.00 .20	15.5 −0.2	50.57 .18	16.9 0.0	27.39 .18	35.5 0.2	60.03 .18	49.6 0.2
17.2	17.81 .18	15.2 0.3	50.40 .17	16.8 0.0	27.22 .16	35.8 0.4	59.86 .17	49.9 0.3
27.2	17.65 .14	14.9 0.4	50.24 .14	16.8 0.0	27.07 .14	36.3 0.6	59.70 .14	50.2 0.4
Nov. 6.1	17.52 .10	14.4 0.5	50.12 .10	16.7 0.0	26.94 .10	36.9 0.7	59.57 .11	50.6 0.5
16.1	17.44 −.06	14.0 0.5	50.04 .06	16.7 0.0	26.86 .07	37.7 0.9	59.48 .07	51.2 0.6
26.1	17.41 .00	13.4 0.5	50.01 −.01	16.7 0.0	26.81 −.02	38.6 1.0	59.43 −.03	51.8 0.7
Dec. 6.0	17.44 +.05	12.9 0.5	50.02 +.04	16.7 0.0	26.81 +.02	39.7 1.1	59.42 +.01	52.5 0.8
16.0	17.52 .10	12.5 0.4	50.09 .09	16.8 +0.1	26.86 .07	40.8 1.2	59.45 .06	53.3 0.9
26.0	17.65 .15	12.1 0.4	50.20 .13	17.0 0.2	26.95 .11	42.1 1.3	59.53 .10	54.3 0.9
36.0	17.82 +.20	11.7 −0.3	50.36 +.17	17.2 +0.3	27.08 +.15	43.5 +1.4	59.65 +.14	55.2 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Lyræ. (*Vega.*)				β Lyræ.				σ Sagittarii.				ζ Aquilæ.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	h m 18 32		° ′ 38 39		h m 18 45		° ′ 33 12		h m 18 46		° ′ 26 27		h m 18 59		° ′ 13 40	
	s		″		s		″		s		″		s		″	
Jan. 1.0	24.44	+.08	50.1	−3.2	8.62	+.08	44.0	−3.0	59.45	+.12	23.1	−0.3	16.40	+.08	13.8	−2.1
11.0	24.55	.13	46.9	3.1	8.72	.12	41.0	2.9	59.60	.16	22.8	0.3	16.50	.12	11.7	2.0
20.9	24.71	.18	43.8	3.0	8.86	.16	38.1	2.8	59.78	.20	22.5	0.2	16.64	.15	9.7	2.0
30.9	24.91	.22	41.0	2.7	9.04	.20	35.4	2.6	60.00	.23	22.3	0.2	16.81	.18	7.8	1.8
Feb. 9.9	25.16	.26	38.5	2.3	9.26	.23	33.0	2.3	60.24	.26	22.1	0.3	17.00	.21	6.1	1.6
19.9	25.43	.28	36.3	1.9	9.52	.26	30.9	1.8	60.51	.28	21.8	0.3	17.23	.23	4.6	1.3
Mar. 1.8	25.72	.31	34.7	1.4	9.79	.28	29.3	1.3	60.80	.30	21.5	0.3	17.47	.25	3.5	0.9
11.8	26.04	.32	33.6	0.8	10.08	.30	28.2	0.8	61.11	.31	21.2	0.3	17.73	.27	2.8	0.5
21.8	26.37	.33	33.2	−0.2	10.39	.31	27.7	−0.3	61.42	.32	20.8	0.4	18.01	.28	2.5	−0.1
31.8	26.70	.33	33.3	+0.4	10.71	.31	27.7	+0.3	61.74	.33	20.4	0.4	18.29	.28	2.7	+0.3
April 10.7	27.03	.32	34.0	1.0	11.02	.31	28.3	0.9	62.06	.32	20.0	0.4	18.57	.28	3.2	0.7
20.7	27.35	.31	35.2	1.5	11.33	.30	29.4	1.4	62.37	.31	19.6	0.4	18.86	.28	4.2	1.1
30.7	27.65	.29	37.0	2.0	11.62	.29	31.0	1.8	62.68	.31	19.2	0.4	19.13	.27	5.4	1.4
May 10.6	27.93	.27	39.1	2.4	11.90	.27	33.1	2.2	62.98	.29	18.8	0.4	19.40	.26	7.0	1.7
20.6	28.19	.24	41.7	2.7	12.16	.24	35.4	2.5	63.26	.27	18.5	0.3	19.65	.24	8.9	1.9
30.6	28.40	.20	44.5	2.9	12.38	.21	38.0	2.7	63.52	.24	18.3	0.2	19.88	.21	10.9	2.1
June 9.6	28.58	.16	47.4	3.0	12.57	.17	40.9	2.9	63.75	.21	18.1	−0.1	20.07	.18	13.0	2.1
19.5	28.72	.11	50.5	3.1	12.72	.13	43.7	2.9	63.94	.17	18.1	0.0	20.24	.15	15.2	2.2
29.5	28.80	.06	53.5	3.0	12.82	.08	46.6	2.9	64.09	.13	18.2	+0.1	20.37	.11	17.4	2.1
July 9.5	28.84	+.01	56.5	2.9	12.88	+.03	49.5	2.8	64.20	.09	18.3	0.2	20.46	.07	19.4	2.0
19.5	28.82	−.04	59.3	2.7	12.89	−.02	52.2	2.6	64.26	+.04	18.6	0.3	20.51	+.02	21.4	1.9
29.4	28.76	.09	61.9	2.5	12.85	.06	54.7	2.4	64.27	−.01	19.0	0.4	20.51	−.02	23.2	1.7
Aug. 8.4	28.65	.13	64.3	2.2	12.76	.11	56.9	2.1	64.24	.06	19.4	0.4	20.47	.06	24.8	1.5
18.4	28.49	.18	66.2	1.8	12.63	.15	58.9	1.8	64.16	.10	19.8	0.4	20.39	.10	26.1	1.2
28.3	28.29	.21	67.9	1.4	12.47	.18	60.5	1.4	64.04	.14	20.3	0.4	20.27	.13	27.2	1.0
Sept. 7.3	28.07	.24	69.1	1.0	12.27	.21	61.8	1.0	63.89	.17	20.7	0.4	20.13	.16	28.1	0.7
17.3	27.82	.26	69.9	0.6	12.04	.23	62.6	0.6	63.71	.19	21.1	0.3	19.95	.18	28.7	0.4
27.3	27.56	.26	70.3	+0.1	11.81	.24	63.0	+0.2	63.51	.20	21.3	0.2	19.76	.19	29.0	+0.1
Oct. 7.2	27.29	.26	70.2	−0.3	11.56	.24	63.1	−0.2	63.31	.20	21.5	+0.1	19.57	.20	28.9	−0.2
17.2	27.03	.25	69.6	0.8	11.33	.23	62.6	0.7	63.12	.19	21.6	0.0	19.38	.18	28.6	0.5
27.2	26.80	.23	68.6	1.3	11.11	.21	61.7	1.1	62.94	.16	21.6	0.0	19.20	.17	28.0	0.8
Nov. 6.2	26.58	.19	67.1	1.7	10.91	.18	60.4	1.5	62.79	.13	21.5	−0.1	19.05	.14	27.1	1.0
16.1	26.41	.15	65.2	2.1	10.75	.14	58.7	1.9	62.68	.09	21.3	0.2	18.92	.11	25.9	1.3
26.1	26.28	.11	62.8	2.5	10.62	.10	56.6	2.3	62.61	−.05	21.1	0.2	18.83	.07	24.5	1.6
Dec. 6.1	26.20	−.06	60.2	2.8	10.54	−.05	54.2	2.6	62.59	.00	20.9	0.3	18.78	−.03	22.8	1.8
16.0	26.17	.00	57.3	3.0	10.52	.00	51.5	2.8	62.61	+.05	20.6	0.3	18.76	+.01	21.0	1.9
26.0	26.20	+.05	54.2	3.1	10.54	+.05	48.6	2.9	62.68	.10	20.3	0.3	18.80	.06	18.9	2.1
36.0	26.27	+.10	51.0	−3.2	10.61	+.09	45.6	−2.9	62.80	+.14	20.1	−0.3	18.87	+.09	16.8	−2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Sagittarii.		δ Aquilæ.		κ Aquilæ.		γ Aquilæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 19 9	° ′ 19 10	h m 19 18	° ′ 2 51	h m 19 29	° ′ 7 18	h m 19 39	° ′ 10 17
	s	″	s	″	s	″	s	″
Jan. 1.0	49.64 +.09	66.1 +0.1	46.15 +.07	15.2 −1.4	42.70 +.07	67.4 +0.8	54.88 +.04	37.4 −1.8
11.0	49.75 .13	66.2 0.1	46.23 .11	13.8 1.4	42.78 .10	68.2 0.8	54.94 .08	35.6 1.8
21.0	49.90 .17	66.3 +0.1	46.36 .14	12.4 1.4	42.90 .14	68.9 0.7	55.04 .12	33.8 1.7
30.9	50.09 .20	66.4 0.0	46.51 .17	11.1 1.2	43.06 .17	69.6 0.6	55.17 .15	32.1 1.6
Feb. 9.9	50.30 .23	66.4 0.0	46.70 .20	9.9 1.1	43.24 .19	70.2 0.5	55.33 .18	30.6 1.4
19.9	50.54 .25	66.3 −0.1	46.91 .22	8.9 0.8	43.44 .21	70.7 0.3	55.52 .20	29.3 1.1
Mar. 1.9	50.80 .27	66.2 0.2	47.14 .24	8.3 0.5	43.68 .24	70.9 +0.1	55.74 .23	28.3 0.8
11.8	51.08 .28	65.9 0.3	47.39 .26	7.9 −0.2	43.92 .26	71.0 −0.1	55.98 .25	27.7 0.5
21.8	51.36 .29	65.5 0.4	47.66 .27	7.8 +0.1	44.19 .27	70.8 0.3	56.23 .26	27.4 −0.1
31.8	51.66 .30	65.0 0.5	47.93 .28	8.0 0.4	44.47 .28	70.3 0.5	56.50 .27	27.5 +0.3
April 10.8	51.96 .30	64.4 0.6	48.21 .28	8.6 0.7	44.75 .29	69.7 0.8	56.78 .28	28.0 0.7
20.7	52.27 .30	63.7 0.7	48.50 .28	9.4 1.0	45.04 .29	68.8 0.9	57.07 .29	28.9 1.0
30.7	52.57 .30	63.0 0.7	48.78 .26	10.6 1.3	45.33 .29	67.8 1.1	57.35 .26	30.1 1.3
May 10.7	52.86 .29	62.2 0.8	49.05 .27	11.9 1.4	45.62 .28	66.6 1.2	57.63 .28	31.6 1.6
20.6	53.14 .27	61.5 0.7	49.32 .25	13.5 1.6	45.89 .27	65.4 1.3	57.91 .26	33.3 1.8
30.6	53.40 .25	60.8 0.7	49.56 .23	15.1 1.7	46.14 .25	64.1 1.3	58.16 .24	35.2 2.0
June 9.6	53.64 .22	60.1 0.6	49.78 .20	16.8 1.7	46.38 .22	62.8 1.3	58.39 .22	37.3 2.1
19.6	53.84 .18	59.6 0.5	49.97 .17	18.5 1.6	46.58 .19	61.6 1.2	58.59 .19	39.3 2.1
29.5	54.00 .14	59.1 0.4	50.12 .14	20.2 1.6	46.75 .15	60.4 1.1	58.76 .15	41.4 2.0
July 9.5	54.13 .10	58.8 0.3	50.24 .10	21.8 1.5	46.89 .11	59.3 1.0	58.89 .11	43.4 2.0
19.5	54.21 .06	58.6 −0.1	50.31 .05	23.3 1.4	46.98 .07	58.4 0.9	58.98 .07	45.3 1.8
29.5	54.24 +.01	58.5 0.0	50.34 +.01	24.6 1.2	47.02 +.02	57.6 0.7	59.02 +.02	47.1 1.7
Aug. 8.4	54.23 −.03	58.6 +0.1	50.33 −.04	25.8 1.1	47.02 −.02	57.0 0.6	59.02 −.02	48.7 1.5
18.4	54.17 .08	58.7 0.2	50.27 .07	26.7 0.9	46.98 .07	56.5 0.4	58.98 .06	50.1 1.3
28.4	54.07 .12	58.9 0.2	50.18 .11	27.5 0.7	46.90 .10	56.2 0.2	58.89 .10	51.2 1.0
Sept. 7.3	53.94 .15	59.1 0.3	50.05 .14	28.1 0.5	46.78 .13	56.0 −0.1	58.77 .13	52.1 0.8
17.3	53.78 .17	59.4 0.3	49.90 .16	28.4 0.3	46.64 .15	56.0 0.0	58.62 .16	52.7 0.5
27.3	53.60 .18	59.7 0.3	49.73 .18	28.6 +0.1	46.48 .17	56.0 +0.1	58.46 .17	53.1 +0.3
Oct. 7.3	53.41 .19	60.0 0.3	49.55 .18	28.5 −0.2	46.30 .18	56.2 0.2	58.28 .18	53.3 0.0
17.2	53.23 .18	60.2 0.2	49.37 .18	28.3 0.3	46.12 .17	56.5 0.3	58.09 .18	53.1 −0.3
27.2	53.06 .16	60.4 0.2	49.20 .16	27.8 0.5	45.95 .16	56.8 0.4	57.91 .17	52.7 0.5
Nov. 6.2	52.90 .14	60.6 0.2	49.05 .14	27.2 0.7	45.80 .14	57.3 0.5	57.75 .15	52.1 0.8
16.2	52.78 .10	60.7 0.2	48.92 .11	26.4 0.9	45.67 .11	57.8 0.6	57.61 .12	51.1 1.0
26.1	52.70 .06	60.9 0.1	48.83 .07	25.4 1.1	45.58 .08	58.4 0.7	57.50 .09	50.0 1.3
Dec. 6.1	52.66 −.02	61.0 0.1	48.78 −.03	24.2 1.2	45.52 −.04	59.1 0.7	57.42 .06	48.6 1.5
16.1	52.66 +.03	61.2 0.1	48.76 +.01	22.9 1.3	45.50 .00	59.9 0.8	57.38 −.02	47.0 1.6
26.0	52.71 .07	61.3 0.2	48.79 .04	21.6 1.4	45.52 +.04	60.7 0.8	57.38 +.02	45.3 1.7
36.0	52.79 +.10	61.5 +0.2	48.85 +.08	20.1 −1.5	45.59 +.08	61.5 +0.8	57.42 +.06	43.6 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ. (*Altair.*)		β Aquilæ.		τ Aquilæ.		α² Capricorni.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$19^{h}\ 44^{m}$	$8^{\circ}\ 31'$	$19^{h}\ 48^{m}$	$6^{\circ}\ 4'$	$19^{h}\ 57^{m}$	$6^{\circ}\ 54'$	$20^{h}\ 10^{m}$	$12^{\circ}\ 56'$
	s	″	s	″	s	″	s	″
Jan. 1.0	16.31 +.04	17.9 −1.7	45.49 +.03	44.1 −1.5	37.35 +.02	24.7 −1.6	38.99 +.03	71.9 +0.4
11.0	16.37 .08	16.2 1.7	45.54 .07	42.5 1.5	37.39 .06	23.1 1.5	39.03 .07	72.2 0.3
21.0	16.47 .11	14.6 1.6	45.64 .11	41.0 1.5	37.48 .10	21.6 1.5	39.12 .10	72.5 0.3
31.0	16.60 .14	13.0 1.5	45.76 .14	39.5 1.4	37.59 .13	20.1 1.4	39.24 .13	72.8 0.2
Feb. 9.9	16.76 .17	11.6 1.3	45.92 .17	38.2 1.2	37.74 .16	18.8 1.2	39.38 .16	72.9 +0.1
19.9	16.95 .20	10.4 1.0	46.10 .20	37.2 1.0	37.92 .19	17.7 1.0	39.56 .19	72.9 −0.1
Mar. 1.9	17.16 .22	9.5 0.8	46.31 .22	36.4 0.7	38.12 .21	16.9 0.7	39.76 .22	72.7 0.2
11.9	17.39 .24	8.9 −0.4	46.54 .24	35.8 −0.3	38.34 .23	16.3 −0.4	39.99 .24	72.4 0.4
21.8	17.65 .26	8.7 0.0	46.79 .26	35.7 0.0	38.59 .25	16.1 0.0	40.24 .26	71.9 0.6
31.8	17.92 .27	8.8 +0.3	47.06 .27	35.8 +0.3	38.85 .27	16.3 +0.3	40.50 .27	71.2 0.8
April 10.8	18.20 .28	9.3 0.7	47.34 .28	36.4 0.7	39.13 .28	16.8 0.7	40.79 .29	70.3 1.0
20.7	18.48 .29	10.2 1.0	47.62 .29	37.2 1.0	39.41 .29	17.7 1.0	41.08 .30	69.3 1.1
30.7	18.77 .29	11.4 1.3	47.91 .29	38.4 1.3	39.70 .29	18.9 1.3	41.38 .30	68.1 1.2
May 10.7	19.05 .28	12.9 1.6	48.19 .28	39.8 1.5	39.98 .28	20.3 1.6	41.68 .30	66.9 1.3
20.7	19.33 .27	14.6 1.8	48.47 .27	41.4 1.7	40.26 .27	22.0 1.7	41.97 .29	65.6 1.3
30.6	19.58 .25	16.5 1.9	48.73 .25	43.2 1.8	40.53 .26	23.8 1.9	42.26 .28	64.4 1.2
June 9.6	19.82 .22	18.5 2.0	48.97 .22	45.1 1.9	40.77 .23	25.7 1.9	42.52 .25	63.2 1.2
19.6	20.03 .19	20.5 2.0	49.18 .19	47.0 1.9	40.99 .20	27.7 2.0	42.76 .23	62.0 1.1
29.6	20.20 .15	22.5 2.0	49.35 .16	48.9 1.9	41.17 .17	29.6 1.9	42.98 .19	61.0 0.9
July 9.5	20.34 .11	24.5 1.9	49.49 .12	50.7 1.8	41.32 .13	31.5 1.8	43.15 .15	60.2 0.8
19.5	20.43 .07	26.3 1.7	49.59 .08	52.4 1.6	41.43 .09	33.3 1.7	43.28 .11	59.4 0.6
29.5	20.48 +.03	28.0 1.6	49.65 +.03	54.0 1.5	41.49 +.04	35.0 1.5	43.37 .07	58.9 0.5
Aug. 8.4	20.49 −.02	29.5 1.2	49.66 −.01	55.3 1.3	41.51 .00	36.4 1.4	43.41 +.02	58.5 0.3
18.4	20.45 .06	30.8 0.9	49.62 .06	56.5 1.1	41.48 −.05	37.7 1.2	43.41 −.03	58.3 −0.1
28.4	20.37 .10	31.9 0.8	49.55 .09	57.5 0.8	41.42 .09	38.7 0.9	43.36 .07	58.2 0.0
Sept. 7.4	20.25 .13	32.8 0.7	49.44 .12	58.2 0.6	41.31 .12	39.5 0.7	43.27 .10	58.3 +0.1
17.3	20.11 .15	33.4 0.5	49.30 .15	58.7 0.4	41.18 .15	40.1 0.5	43.15 .13	58.5 0.2
27.3	19.95 .17	33.7 +0.2	49.14 .17	59.0 +0.2	41.02 .17	40.5 +0.2	43.00 .16	58.7 0.3
Oct. 7.3	19.77 .18	33.9 0.0	48.97 .18	59.1 −0.1	40.85 .18	40.6 0.0	42.84 .17	59.1 0.4
17.3	19.59 .18	33.7 −0.2	48.79 .18	58.9 0.3	40.67 .16	40.5 −0.2	42.67 .17	59.5 0.4
27.2	19.42 .17	33.4 0.5	48.61 .17	58.5 0.5	40.50 .17	40.1 0.5	42.49 .17	59.9 0.4
Nov. 6.2	19.25 .15	32.7 0.7	48.45 .15	57.9 0.7	40.33 .15	39.5 0.7	42.33 .15	60.3 0.4
16.2	19.12 .12	31.9 1.0	48.31 .13	57.1 0.9	40.19 .13	38.8 0.9	42.19 .13	60.8 0.5
26.1	19.01 .09	30.8 1.2	48.20 .10	56.1 1.1	40.08 .10	37.8 1.1	42.08 .10	61.2 0.3
Dec. 6.1	18.93 .06	29.5 1.4	48.12 .06	54.9 1.3	39.99 .07	36.6 1.3	41.99 .07	61.7 0.5
16.1	18.89 −.02	28.1 1.5	48.08 −.02	53.5 1.4	39.94 −.03	35.2 1.4	41.95 −.03	62.1 0.3
26.1	18.89 +.02	26.5 1.6	48.08 +.02	52.0 1.5	39.93 +.01	33.7 1.5	41.93 +.01	62.6 0.4
36.0	18.92 +.06	24.8 −1.7	48.11 +.05	50.5 −1.6	39.95 +.04	32.2 −1.6	41.96 +.05	63.0 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pavonis.		π Capricorni.		ι Delphini.		α Cygni.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$20^h\ 15^m$	$57^\circ\ 9'$	$20^h\ 19^m$	$18^\circ\ 38'$	$20^h\ 26^m$	$10^\circ\ 51'$	$20^h\ 36^m$	$44^\circ\ 48'$
	s	″	s	″	s	″	s	″
Jan. 1.1	3.92 +.01	26.6 −2.2	40.89 +.02	38.8 0.0	50.32 .00	18.9 −1.6	52.61 −.08	36.4 −2.7
11.0	3.96 .08	24.4 2.3	40.93 .06	38.8 0.0	50.34 +.03	17.2 1.7	52.56 −.03	33.5 2.9
21.0	4.08 .14	22.1 2.4	41.01 .09	38.8 −0.1	50.39 .07	15.6 1.6	52.55 +.02	30.5 3.0
31.0	4.25 .21	19.7 2.4	41.12 .13	38.6 0.2	50.47 .10	13.9 1.5	52.60 .07	27.5 3.0
Feb. 10.0	4.49 .27	17.3 2.3	41.27 .16	38.3 0.3	50.59 .13	12.5 1.4	52.69 .12	24.6 2.9
19.9	4.79 .32	15.0 2.3	41.44 .19	38.0 0.4	50.74 .16	11.2 1.2	52.84 .17	21.8 2.6
Mar. 1.9	5.13 .36	12.8 2.1	41.64 .21	37.5 0.6	50.92 .19	10.2 0.9	53.03 .21	19.3 2.3
11.9	5.51 .41	10.7 2.0	41.87 .24	36.9 0.7	51.12 .22	9.5 0.5	53.27 .25	17.3 1.8
21.9	5.94 .44	8.8 1.8	42.12 .26	36.1 0.8	51.35 .24	9.1 −0.2	53.54 .29	15.7 1.3
31.8	6.39 .47	7.2 1.5	42.39 .28	35.2 1.0	51.60 .26	9.1 +0.2	53.85 .32	14.7 0.7
April 10.8	6.87 .49	5.8 1.3	42.68 .29	34.2 1.1	51.86 .27	9.5 0.6	54.19 .34	14.2 −0.2
20.8	7.37 .50	4.6 1.0	42.97 .30	33.1 1.1	52.15 .29	10.3 1.0	54.54 .36	14.4 +0.4
30.7	7.87 .51	3.8 0.7	43.28 .31	31.9 1.2	52.44 .29	11.5 1.3	54.91 .37	15.1 1.0
May 10.7	8.38 .50	3.3 −0.3	43.59 .31	30.7 1.2	52.73 .29	12.9 1.6	55.27 .36	16.4 1.5
20.7	8.87 .49	3.2 0.0	43.90 .30	29.6 1.2	53.02 .28	14.6 1.8	55.63 .35	18.2 2.0
30.7	9.35 .46	3.4 +0.4	44.19 .29	28.4 1.1	53.29 .27	16.5 2.0	55.97 .33	20.4 2.4
June 9.6	9.79 .42	3.9 0.7	44.47 .27	27.4 1.0	53.56 .25	18.6 2.1	56.28 .30	23.0 2.7
19.6	10.19 .37	4.8 1.0	44.73 .24	26.5 0.8	53.79 .22	20.8 2.2	56.55 .26	25.9 3.0
29.6	10.54 .32	6.0 1.3	44.95 .21	25.7 0.7	54.00 .19	22.9 2.1	56.79 .21	29.0 3.2
July 9.6	10.83 .25	7.5 1.6	45.14 .17	25.1 0.5	54.17 .15	25.0 2.1	56.97 .16	32.3 3.3
19.5	11.04 .18	9.2 1.8	45.29 .12	24.7 0.3	54.30 .11	27.1 2.0	57.11 .10	35.6 3.3
29.5	11.18 .10	11.1 2.0	45.39 .06	24.5 −0.1	54.39 .07	29.0 1.8	57.18 +.05	38.8 3.2
Aug. 8.5	11.25 +.02	13.2 2.1	45.44 +.03	24.4 0.0	54.43 +.02	30.7 1.6	57.20 −.01	42.0 3.1
18.4	11.23 −.06	15.2 2.1	45.44 −.02	24.5 +0.2	54.43 −.02	32.3 1.4	57.16 .07	45.0 2.9
28.4	11.13 .13	17.3 2.0	45.40 .06	24.8 0.3	54.38 .06	33.6 1.2	57.07 .12	47.7 2.6
Sept. 7.4	10.97 .20	19.2 1.8	45.32 .10	25.1 0.4	54.30 .10	34.7 1.0	56.93 .16	50.2 2.3
17.4	10.74 .25	20.9 1.6	45.21 .13	25.5 0.5	54.18 .13	35.5 0.7	56.74 .20	52.3 1.9
27.3	10.46 .30	22.4 1.3	45.06 .16	26.0 0.5	54.04 .15	36.1 0.4	56.52 .23	54.1 1.5
Oct. 7.3	10.15 .32	23.6 0.9	44.89 .17	26.5 0.5	53.88 .17	36.4 +0.2	56.27 .26	55.4 1.1
17.3	9.81 .34	24.4 0.6	44.72 .18	27.0 0.5	53.70 .17	36.4 −0.1	56.01 .27	56.3 0.6
27.3	9.48 .33	24.8 +0.2	44.54 .17	27.5 0.4	53.53 .17	36.2 0.4	55.73 .27	56.7 +0.1
Nov. 6.2	9.15 .31	24.7 −0.3	44.38 .16	27.9 0.4	53.36 .16	35.7 0.6	55.46 .26	56.6 −0.4
16.2	8.86 .27	24.3 0.7	44.23 .14	28.2 0.3	53.21 .14	35.0 0.8	55.20 .25	55.9 0.9
26.2	8.61 .22	23.4 1.1	44.11 .11	28.5 0.3	53.08 .12	34.1 1.1	54.97 .22	54.8 1.4
Dec. 6.1	8.41 .17	22.1 1.4	44.01 .07	28.8 0.2	52.97 .09	32.9 1.3	54.76 .19	53.2 1.8
16.1	8.28 .10	20.5 1.7	43.96 −.04	28.9 0.2	52.90 .06	31.5 1.5	54.59 .15	51.2 2.2
26.1	8.21 −.03	18.6 2.0	43.94 .00	29.1 +0.1	52.86 −.02	29.9 1.6	54.45 .11	48.8 2.6
36.1	8.21 +.03	16.5 −2.2	43.96 +.04	29.2 0.0	52.85 +.02	28.3 −1.6	54.37 −.06	46.0 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Aquarii.				ν Cygni.				61¹ Cygni.				ζ Cygni.			
	Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*	
	$20^{h}\ 45^{m}$		$9^{\circ}\ 28'$		$20^{h}\ 52^{m}$		$40^{\circ}\ 39'$		$21^{h}\ 0^{m}$		$38^{\circ}\ 5'$		$21^{h}\ 7^{m}$		$29^{\circ}\ 40'$	
	s		″		s		″		s		″		s		″	
Jan. 1.1	27.39	·00	45.0	+0·6	11.79	−·08	36.3	−2·6	54.87	−·07	61.3	−2·3	15.59	−·06	68.9	−2·2
11.1	27.41	+·03	45.5	0·5	11.73	−·04	33.7	2·7	54.82	−·03	58.8	2·5	15.54	−·03	66.7	2·3
21.0	27.45	·06	46.0	0·4	11.71	+·01	30.9	2·8	54.81	+·01	56.2	2·6	15.53	+·01	64.3	2·4
31.0	27.53	·09	46.4	0·3	11.74	·05	28.0	2·8	54.84	·05	53.5	2·7	15.56	·05	61.9	2·4
Feb. 10.0	27.64	·12	46.6	+0·2	11.82	·10	25.2	2·7	54.91	·10	50.9	2·5	15.62	·06	59.5	2·3
20.0	27.78	·15	46.7	0·0	11.94	·15	22.5	2·5	55.04	·14	48.5	2·3	15.73	·12	57.3	2·1
Mar. 1.9	27.95	·18	46.6	−0·2	12.11	·19	20.2	2·2	55.20	·18	46.3	2·0	15.87	·16	55.4	1·8
11.9	28.15	·21	46.3	0·4	12.32	·23	18.2	1·6	55.40	·22	44.4	1·6	16.05	·20	53.8	1·4
21.9	28.37	·23	45.8	0·6	12.56	·26	16.6	1·3	55.65	·26	43.0	1·2	16.26	·23	52.6	1·0
31.8	28.61	·25	45.1	0·8	12.85	·30	15.6	0·7	55.93	·29	42.1	0·6	16.51	·26	51.8	−0·5
April 10.8	28.87	·27	44.2	1·0	13.16	·32	15.1	−0·2	56.23	·32	41.7	−0·1	16.78	·28	51.5	0·0
20.8	29.15	·29	43.0	1·2	13.49	·34	15.2	+0·4	56.56	·34	41.9	+0·4	17.07	·30	51.8	+0·5
30.8	29.45	·30	41.8	1·3	13.83	·35	15.9	0·9	56.90	·35	42.6	1·0	17.38	·31	52.5	1·0
May 10.7	29.75	·30	40.4	1·4	14.18	·35	17.1	1·4	57.25	·35	43.8	1·5	17.70	·32	53.7	1·4
20.7	30.05	·30	38.9	1·5	14.53	·34	18.8	1·9	57.60	·34	45.5	1·9	18.02	·32	55.3	1·8
30.7	30.34	·29	37.4	1·5	14.86	·32	20.9	2·4	57.94	·33	47.7	2·3	18.33	·31	57.3	2·2
June 9.7	30.62	·27	35.9	1·5	15.17	·30	23.4	2·6	58.26	·31	50.2	2·7	18.63	·29	59.7	2·4
19.6	30.88	·25	34.5	1·4	15.46	·26	26.1	2·9	58.55	·27	53.0	2·9	18.90	·26	62.2	2·6
29.6	31.11	·21	33.2	1·2	15.70	·22	29.1	3·1	58.81	·24	56.0	3·1	19.14	·23	64.9	2·8
July 9.6	31.31	·18	32.0	1·1	15.90	·18	32.3	3·2	59.03	·19	59.1	3·2	19.35	·19	67.8	2·8
19.5	31.47	·14	31.0	0·9	16.05	·12	35.5	3·2	59.20	·14	62.3	3·2	19.52	·14	70.6	2·8
29.5	31.59	·10	30.2	0·7	16.15	·07	38.6	3·1	59.32	·09	65.5	3·2	19.63	·10	73.4	2·8
Aug. 8.5	31.66	+·05	29.5	0·6	16.19	+·02	41.7	3·0	59.38	+·04	68.6	3·0	19.71	+·06	76.2	2·6
18.5	31.69	·00	29.1	0·4	16.18	−·03	44.6	2·8	59.40	−·01	71.6	2·9	19.73	·00	78.7	2·5
28.4	31.67	−·04	28.8	−0·2	16.12	·09	47.4	2·6	59.36	·06	74.3	2·6	19.70	−·05	81.1	2·2
Sept. 7.4	31.61	·08	28.7	0·0	16.01	·13	49.8	2·3	59.28	·11	76.9	2·3	19.63	·09	83.2	1·9
17.4	31.52	·11	28.8	+0·1	15.86	·17	51.9	1·9	59.15	·14	79.0	2·0	19.52	·13	85.0	1·6
27.4	31.39	·14	28.9	0·2	15.67	·20	53.7	1·6	58.99	·18	80.9	1·6	19.38	·16	86.5	1·3
Oct. 7.3	31.25	·15	29.2	0·3	15.45	·22	55.0	1·1	58.80	·20	82.3	1·2	19.21	·18	87.6	0·9
17.3	31.09	·16	29.6	0·4	15.22	·24	56.0	0·7	58.59	·21	83.3	0·8	19.03	·19	88.3	0·6
27.3	30.92	·16	30.1	0·5	14.97	·25	56.5	+0·2	58.37	·22	83.9	+0·4	18.83	·20	88.7	+0·2
Nov. 6.2	30.76	·15	30.6	0·5	14.73	·24	56.5	−0·2	58.15	·22	84.1	−0·1	18.63	·19	86.7	−0·2
16.2	30.62	·14	31.1	0·6	14.49	·23	56.0	0·7	57.94	·21	83.7	0·8	18.44	·18	88.2	0·6
26.2	30.49	·11	31.7	0·6	14.28	·21	55.0	1·2	57.74	·19	83.0	1·0	18.26	·17	87.4	1·0
Dec. 6.2	30.39	·09	32.3	0·6	14.08	·18	53.6	1·6	57.56	·16	81.7	1·4	18.11	·14	86.2	1·4
16.1	30.31	·06	32.9	0·6	13.92	·15	51.7	2·0	57.41	·13	80.1	1·8	17.97	·12	84.5	1·7
26.1	30.27	−·02	33.5	0·6	13.79	·11	49.5	2·4	57.30	·10	78.0	2·2	17.87	·09	82.7	2·0
36.1	30.27	+·01	34.1	+0·6	13.71	−·07	47.0	−2·7	57.22	−·06	75.7	−2·4	17.80	−·05	80.5	−2·2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cephei.				1 Pegasi.				β Aquarii.				ξ Aquarii.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *South.*	
	h m 21 15		° ′ 62 1		h m 21 15		° ′ 19 14		h m 21 24		° ′ 6 8		h m 21 30		° ′ 8 26	
	s		″		s		″		s		″		s		″	
Jan. 1.1	22.86	−.24	37.6	−2.5	55.27	−.06	23.3	−1.8	32.24	−.04	73.7	+0.7	39.07	−.03	54.5	+0.6
11.1	22.65	.17	34.9	2.9	55.24	−.02	21.5	1.9	32.22	−.01	74.4	0.6	39.05	−.01	55.0	0.5
21.1	22.51	.10	31.8	3.2	55.23	+.01	19.6	1.9	32.23	+.02	75.0	0.5	39.05	+.02	55.5	0.4
31.0	22.45	−.02	28.6	3.3	55.26	.06	17.6	1.9	32.27	.05	75.5	0.4	39.08	.05	55.8	0.3
Feb. 10.0	22.46	+.06	25.3	3.3	55.32	.08	15.8	1.8	32.33	.08	75.8	0.3	39.14	.08	56.0	+0.1
20.0	22.56	.14	22.1	3.1	55.42	.11	14.1	1.6	32.43	.12	76.0	+0.1	39.24	.11	56.1	0.0
Mar. 1.9	22.74	.22	19.0	2.9	55.55	.15	12.7	1.3	32.56	.14	76.1	−0.1	39.36	.14	56.0	0.2
11.9	23.00	.29	16.3	2.5	55.72	.18	11.5	1.0	32.72	.17	75.8	0.3	39.52	.17	55.6	0.5
21.9	23.33	.36	14.1	2.0	55.91	.21	10.7	0.6	32.91	.20	75.4	0.6	39.70	.20	55.0	0.7
31.9	23.72	.42	12.3	1.5	56.14	.24	10.4	−0.1	33.12	.23	74.7	0.8	39.91	.23	54.2	0.9
April 10.8	24.16	.46	11.1	0.9	56.39	.26	10.4	+0.3	33.36	.26	73.8	1.0	40.15	.25	53.2	1.1
20.8	24.64	.49	10.4	−0.3	56.66	.28	10.9	0.7	33.63	.27	72.6	1.2	40.41	.27	52.0	1.3
30.8	25.15	.51	10.5	+0.3	56.95	.30	11.8	1.1	33.91	.29	71.3	1.4	40.69	.29	50.6	1.5
May 10.8	25.67	.52	11.1	0.9	57.25	.30	13.0	1.5	34.20	.30	69.8	1.6	40.99	.30	49.1	1.6
20.7	26.18	.50	12.3	1.5	57.56	.30	14.7	1.8	34.50	.30	68.2	1.7	41.29	.30	47.5	1.6
30.7	26.67	.48	14.1	2.0	57.86	.30	16.6	2.0	34.80	.30	66.5	1.7	41.59	.30	45.8	1.7
June 9.7	27.13	.44	16.4	2.5	58.15	.28	18.8	2.3	35.09	.29	64.8	1.7	41.89	.29	44.1	1.7
19.6	27.55	.39	19.0	2.9	58.42	.26	21.1	2.4	35.37	.27	63.1	1.6	42.17	.27	42.5	1.6
29.6	27.90	.32	22.1	3.2	58.66	.23	23.6	2.5	35.63	.24	61.5	1.5	42.43	.25	41.0	1.5
July 9.6	28.19	.26	25.4	3.4	58.87	.19	26.1	2.5	35.86	.21	60.1	1.4	42.66	.21	39.6	1.3
19.6	28.41	.18	28.8	3.5	59.05	.15	28.5	2.4	36.05	.17	58.7	1.2	42.86	.18	38.4	1.1
29.5	28.55	.10	32.4	3.6	59.18	.11	30.9	2.3	36.20	.13	57.6	1.0	43.02	.14	37.4	0.9
Aug. 8.5	28.60	+.02	35.9	3.6	59.26	.06	33.2	2.2	36.30	.09	56.7	0.8	43.13	.09	36.6	0.7
18.5	28.58	−.06	39.5	3.4	59.31	+.02	35.3	2.0	36.37	+.04	56.0	0.6	43.20	+.05	36.0	0.5
28.5	28.48	.14	42.8	3.3	59.30	−.03	37.2	1.8	36.38	.00	55.5	0.4	43.23	.00	35.6	0.3
Sept. 7.4	28.30	.21	46.0	3.0	59.25	.07	38.9	1.5	36.36	−.04	55.2	0.2	43.21	−.04	35.4	+0.1
17.4	28.06	.27	48.9	2.7	59.17	.10	40.3	1.2	36.30	.08	55.0	−0.1	43.15	.07	35.4	−0.1
27.4	27.75	.33	51.4	2.3	59.05	.13	41.3	1.0	36.20	.11	55.1	+0.1	43.06	.10	35.6	0.2
Oct. 7.3	27.40	.37	53.6	1.9	58.91	.15	42.2	0.7	36.08	.13	55.3	0.3	42.95	.13	35.9	0.4
17.3	27.01	.40	55.3	1.5	58.75	.16	42.6	+0.3	35.94	.15	55.6	0.4	42.81	.14	36.3	0.5
27.3	26.59	.42	56.5	1.0	58.58	.17	42.8	0.0	35.79	.15	56.1	0.5	42.66	.15	36.8	0.5
Nov. 6.3	26.16	.43	57.2	+0.4	58.41	.17	42.6	−0.3	35.64	.15	56.6	0.6	42.51	.15	37.4	0.6
16.2	25.73	.43	57.3	−0.2	58.24	.16	42.2	0.6	35.49	.14	57.2	0.6	42.36	.14	38.0	0.6
26.2	25.31	.41	56.8	0.8	58.09	.14	41.4	0.9	35.35	.13	57.8	0.7	42.22	.13	38.6	0.6
Dec. 6.2	24.91	.38	55.8	1.3	57.95	.12	40.3	1.2	35.24	.11	58.5	0.7	42.10	.11	39.2	0.6
16.2	24.55	.34	54.2	1.8	57.84	.10	39.0	1.5	35.14	.08	59.2	0.7	42.01	.08	39.9	0.6
26.1	24.24	.28	52.1	2.3	57.75	.07	37.4	1.7	35.08	.05	59.9	0.7	41.94	.06	40.5	0.6
36.1	23.99	−.22	49.5	−2.7	57.70	−.03	35.6	−1.8	35.04	−.02	60.6	+0.7	41.89	−.03	41.1	−0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Pegasi.		μ Capricorni.		α Aquarii.		α Gruis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 21 37	° ′ 9 15	h m 21 46	° ′ 14 10	h m 21 58	° ′ 0 57	h m 21 59	° ′ 47 35
	s	″	s	″	s	″	s	″
Jan. 1.1	38.33 −.06	66.1 −1.3	1.46 −.05	34.8 +0.3	56.21 −.06	49.7 +0.9	48.37 −.11	79.3 −1.2
11.1	38.28 −.03	64.8 1.4	1.42 −.02	35.0 0.2	56.16 .04	50.6 0.8	48.27 .07	77.9 1.5
21.1	38.27 .00	63.4 1.4	1.41 +.01	35.1 +0.1	56.13 −.01	51.4 0.8	48.22 −.03	76.2 1.8
31.0	38.29 +.03	62.1 1.3	1.43 .03	35.1 −0.1	56.14 +.02	52.1 0.7	48.21 +.02	74.2 2.0
Feb. 10.0	38.33 .06	60.8 1.2	1.48 .07	34.9 0.3	56.17 .05	52.7 0.5	48.25 .06	72.1 2.2
20.0	38.41 .10	59.7 1.0	1.56 .10	34.6 0.4	56.23 .08	53.2 0.4	48.34 .11	69.8 2.4
Mar. 2.0	38.52 .13	58.8 0.8	1.68 .13	34.1 0.6	56.32 .11	53.4 +0.2	48.47 .15	67.3 2.5
11.9	38.67 .16	58.2 0.5	1.82 .16	33.3 0.8	56.44 .14	53.5 −0.1	48.64 .20	64.8 2.5
21.9	38.84 .19	57.9 −0.2	2.00 .19	32.4 1.0	56.60 .17	53.2 0.4	48.86 .24	62.3 2.5
31.9	39.04 .22	57.9 +0.2	2.20 .22	31.3 1.2	56.78 .20	52.7 0.6	49.13 .28	59.8 2.5
April 10.9	39.27 .24	58.2 0.6	2.43 .25	30.1 1.4	57.00 .23	52.0 0.9	49.43 .32	57.4 2.3
20.8	39.53 .27	58.9 0.9	2.69 .27	28.6 1.5	57.24 .25	50.9 1.2	49.77 .35	55.2 2.2
30.8	39.81 .28	60.0 1.2	2.97 .29	27.1 1.6	57.51 .27	49.7 1.4	50.13 .38	53.1 2.0
May 10.8	40.10 .30	61.3 1.4	3.27 .30	25.5 1.6	57.79 .29	48.2 1.6	50.53 .40	51.2 1.7
20.7	40.40 .30	62.9 1.7	3.57 .31	23.8 1.7	58.09 .30	46.5 1.7	50.93 .41	49.6 1.4
30.7	40.69 .30	64.7 1.9	3.89 .31	22.1 1.6	58.39 .30	44.7 1.8	51.35 .42	48.3 1.1
June 9.7	40.99 .29	66.8 2.0	4.19 .30	20.5 1.6	58.69 .29	42.8 1.9	51.77 .41	47.4 0.7
19.7	41.27 .27	68.8 2.1	4.49 .29	19.0 1.4	58.98 .28	41.0 1.9	52.17 .39	46.9 −0.4
29.6	41.52 .24	71.0 2.1	4.76 .26	17.7 1.3	59.25 .26	39.1 1.8	52.55 .36	46.7 0.0
July 9.6	41.75 .21	73.1 2.1	5.01 .23	16.5 1.1	59.49 .23	37.4 1.7	52.90 .33	46.9 +0.4
19.6	41.94 .18	75.2 2.0	5.23 .20	15.5 0.9	59.71 .19	35.7 1.6	53.20 .28	47.5 0.8
29.6	42.10 .13	77.2 1.9	5.40 .15	14.8 0.6	59.88 .16	34.2 1.4	53.46 .23	48.5 1.1
Aug. 8.5	42.21 .09	79.0 1.7	5.54 .11	14.2 0.4	60.02 .12	32.9 1.2	53.65 .17	49.8 1.4
18.5	42.28 +.05	80.6 1.5	5.62 .06	14.0 −0.2	60.11 .07	31.9 1.0	53.79 .10	51.4 1.7
28.5	42.30 .00	82.0 1.3	5.67 +.02	13.9 0.0	60.16 +.03	31.0 0.8	53.86 +.04	53.1 1.9
Sept. 7.4	42.28 −.04	83.2 1.1	5.66 −.02	14.0 +0.2	60.17 −.01	30.4 0.5	53.87 −.02	55.1 2.0
17.4	42.23 .07	84.1 0.8	5.62 .06	14.4 0.4	60.14 .05	29.9 0.3	53.81 .08	57.1 2.0
27.4	42.14 .10	84.8 0.6	5.54 .09	14.8 0.5	60.07 .08	29.7 −0.1	53.70 .13	59.0 1.9
Oct. 7.4	42.02 .13	85.3 0.4	5.43 .12	15.4 0.6	59.97 .11	29.7 +0.1	53.55 .18	60.9 1.8
17.3	41.88 .14	85.5 +0.1	5.31 .14	16.0 0.7	59.85 .13	29.8 0.2	53.35 .21	62.6 1.6
27.3	41.73 .15	85.5 −0.1	5.16 .15	16.7 0.7	59.72 .14	30.1 0.4	53.13 .23	64.0 1.3
Nov. 6.3	41.58 .15	85.2 0.4	5.01 .15	17.4 0.7	59.58 .14	30.6 0.5	52.89 .24	65.2 1.0
16.3	41.43 .15	84.8 0.6	4.86 .14	18.0 0.6	59.43 .14	31.1 0.6	52.65 .24	66.0 0.6
26.2	41.29 .13	84.1 0.8	4.72 .13	18.7 0.6	59.30 .13	31.8 0.7	52.42 .22	66.4 +0.2
Dec. 6.2	41.16 .12	83.2 1.0	4.60 .12	19.2 0.5	59.17 .12	32.5 0.8	52.21 .20	66.3 −0.2
16.2	41.05 .10	82.2 1.1	4.49 .09	19.7 0.5	59.07 .10	33.4 0.8	52.02 .17	65.9 0.6
26.1	40.97 .07	81.0 1.3	4.41 .07	20.1 0.4	58.98 .08	34.2 0.9	51.86 .14	65.1 1.0
36.1	49.91 −.06	79.6 −1.4	4.36 −.04	20.5 +0.3	58.91 −.06	35.1 +0.9	51.75 −.10	64.0 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Aquarii.		π Aquarii.		η Aquarii.		ζ Pegasi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 22 9	° ′ 8 26	h m 22 18	° ′ 0 42	h m 22 28	° ′ 0 47	h m 22 34	° ′ 10 8
	s	″	s	″	s	″	s	″
Jan. 1.2	47.89 −.07	39.2 +0.5	28.25 −.08	14.8 −0.9	30.51 −.06	65.6 +0.8	49.09 −.09	21.7 −1.1
11.1	47.83 .04	39.7 0.4	28.19 .05	13.9 0.9	30.44 .06	66.4 0.8	49.00 .07	20.6 1.2
21.1	47.80 −.02	40.1 0.4	28.15 −.02	13.1 0.8	30.39 .04	67.2 0.7	48.94 .05	19.4 1.2
31.1	47.80 +.01	40.4 0.2	28.13 .00	12.3 0.7	30.36 −.01	67.9 0.6	48.91 −.02	18.1 1.2
Feb. 10.0	47.82 .04	40.5 +0.1	28.14 +.03	11.6 0.6	30.37 +.02	68.4 0.5	48.90 +.01	17.0 1.1
20.0	47.87 .07	40.5 −0.1	28.18 .06	11.1 0.4	30.40 .05	68.9 0.3	48.92 .04	15.9 0.9
Mar. 2.0	47.96 .10	40.3 0.3	28.25 .09	10.7 −0.2	30.46 .08	69.1 +0.1	48.97 .07	15.0 0.8
12.0	48.07 .13	39.9 0.5	28.36 .12	10.7 0.0	30.55 .11	69.1 −0.1	49.06 .10	14.4 0.5
21.9	48.22 .16	39.3 0.8	28.49 .15	10.8 +0.3	30.68 .15	68.9 0.4	49.18 .14	14.0 −0.2
31.9	48.40 .20	38.4 1.0	28.67 .19	11.2 0.6	30.84 .18	68.4 0.6	49.33 .17	13.9 +0.1
April 10.9	48.61 .23	37.3 1.2	28.87 .22	11.9 0.8	31.04 .21	67.6 0.9	49.52 .21	14.1 0.4
20.9	48.85 .25	36.0 1.4	29.10 .24	12.9 1.1	31.26 .24	66.6 1.2	49.75 .24	14.7 0.7
30.8	49.12 .27	34.5 1.6	29.36 .27	14.1 1.3	31.51 .26	65.3 1.4	50.00 .26	15.6 1.1
May 10.8	49.40 .29	32.8 1.7	29.63 .29	15.6 1.6	31.79 .28	63.8 1.6	50.27 .28	16.8 1.4
20.8	49.70 .30	31.1 1.8	29.93 .30	17.2 1.7	32.08 .30	62.1 1.8	50.56 .30	18.3 1.6
30.7	50.00 .31	29.3 1.8	30.23 .30	19.0 1.9	32.38 .30	60.3 1.9	50.87 .30	20.0 1.8
June 9.7	50.31 .30	27.5 1.8	30.53 .30	21.0 1.9	32.68 .30	58.4 1.9	51.17 .30	22.0 2.0
19.7	50.61 .29	25.8 1.7	30.83 .29	22.9 1.9	32.98 .29	56.4 1.9	51.47 .29	24.0 2.1
29.7	50.89 .27	24.1 1.6	31.10 .27	24.8 1.9	33.27 .27	54.6 1.9	51.76 .28	26.2 2.2
July 9.6	51.15 .24	22.6 1.4	31.36 .25	26.7 1.8	33.53 .26	52.7 1.8	52.02 .25	28.4 2.1
19.6	51.37 .21	21.3 1.2	31.59 .21	28.4 1.7	33.76 .22	51.0 1.6	52.26 .22	30.5 2.1
29.6	51.56 .17	20.2 1.0	31.78 .17	30.0 1.5	33.96 .18	49.5 1.5	52.46 .18	32.5 2.0
Aug. 8.6	51.71 .13	19.3 0.8	31.93 .13	31.5 1.3	34.13 .14	48.1 1.2	52.63 .14	34.4 1.8
18.5	51.82 .09	18.6 0.6	32.04 .09	32.7 1.1	34.25 .10	47.0 1.0	52.75 .10	36.1 1.7
28.5	51.88 +.04	18.2 0.3	32.11 .05	33.7 0.9	34.33 .06	46.1 0.8	52.83 .06	37.7 1.5
Sept. 7.5	51.90 .00	18.0 −0.1	32.13 +.01	34.4 0.6	34.36 +.02	45.4 0.6	52.87 +.02	39.0 1.2
17.4	51.88 −.04	18.0 +0.1	32.12 −.03	34.9 0.4	34.36 −.02	44.9 0.3	52.86 −.02	40.1 1.0
27.4	51.83 .07	18.1 0.3	32.07 .07	35.3 +0.2	34.32 .06	44.7 −0.1	52.83 .06	41.0 0.7
Oct. 7.4	51.74 .10	18.5 0.4	31.99 .09	35.4 0.0	34.24 .09	44.7 +0.1	52.76 .08	41.6 0.5
17.4	51.62 .12	18.9 0.5	31.88 .11	35.3 −0.2	34.14 .11	44.8 0.2	52.66 .11	42.0 +0.3
27.3	51.49 .13	19.5 0.6	31.76 .13	35.1 0.3	34.03 .12	45.1 0.4	52.55 .12	42.2 0.0
Nov. 6.3	51.35 .14	20.1 0.6	31.63 .14	34.7 0.5	33.90 .13	45.5 0.5	52.42 .13	42.1 −0.2
16.3	51.21 .14	20.8 0.7	31.49 .14	34.1 0.6	33.77 .13	46.1 0.6	52.28 .14	41.8 0.4
26.3	51.08 .13	21.5 0.7	31.36 .13	33.5 0.7	33.63 .13	46.7 0.7	52.15 .13	41.3 0.6
Dec. 6.2	50.95 .12	21.2 0.7	31.23 .12	32.8 0.8	33.51 .12	47.5 0.8	52.01 .13	40.6 0.8
16.2	50.84 .10	22.8 0.7	31.12 .11	32.0 0.8	33.39 .11	48.2 0.8	51.89 .11	39.7 0.9
26.2	50.75 .08	23.5 0.6	31.02 .09	31.1 0.9	33.29 .09	49.1 0.8	51.78 .10	38.7 1.1
36.1	50.68 −.06	24.0 +0.5	30.94 −.07	30.2 −0.9	33.21 −.07	49.9 +0.8	51.69 −.08	37.6 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Aquarii.		α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	22h 45m	8° 16′	22h 50m	30° 19′	22h 58m	14° 29′
	s	″	s	″	s	″
Jan. 1.2	39.64 −.09	72.8 +0.6	16.63 −.11	42.4 −0.2	7.77 −.10	31.7 −1.2
11.1	39.56 .07	73.4 0.5	16.53 .09	42.0 0.5	7.67 .09	30.5 1.3
21.1	39.50 .05	73.8 0.3	16.46 .06	41.4 0.8	7.59 .07	29.2 1.3
31.1	39.46 −.02	74.0 +0.2	16.41 −.03	40.5 1.0	7.53 .05	27.9 1.3
Feb. 10.1	39.45 .00	74.2 0.0	16.39 .00	39.3 1.3	7.50 −.02	26.6 1.3
20.0	39.46 +.03	74.1 −0.2	16.40 +.03	38.0 1.5	7.49 +.01	25.3 1.2
Mar. 2.0	39.51 .06	73.8 0.4	16.45 .07	36.4 1.7	7.52 .04	24.2 1.0
12.0	39.59 .10	73.4 0.6	16.53 .10	34.6 1.9	7.58 .08	23.3 0.8
22.0	39.70 .13	72.7 0.8	16.65 .14	32.7 2.0	7.68 .12	22.7 0.5
31.9	39.85 .16	71.8 1.0	16.81 .18	30.6 2.1	7.81 .15	22.3 −0.2
April 10.9	40.03 .20	70.6 1.3	17.01 .21	28.4 2.2	7.99 .19	22.3 +0.1
20.9	40.24 .23	69.2 1.5	17.24 .25	26.2 2.2	8.19 .22	22.6 0.5
30.8	40.49 .26	67.7 1.6	17.51 .28	24.0 2.2	8.43 .25	23.3 0.8
May 10.8	40.76 .28	66.0 1.8	17.80 .31	21.8 2.1	8.70 .28	24.3 1.2
20.8	41.05 .30	64.2 1.8	18.12 .33	19.8 2.0	8.99 .30	25.7 1.5
30.8	41.35 .30	62.3 1.9	18.45 .34	17.9 1.8	9.29 .31	27.3 1.7
June 9.7	41.65 .31	60.4 1.9	18.79 .34	16.1 1.6	9.60 .31	29.1 2.0
19.7	41.96 .30	58.6 1.8	19.14 .34	14.6 1.3	9.91 .30	31.2 2.1
29.7	42.26 .29	56.8 1.7	19.47 .32	13.4 1.0	10.21 .29	33.3 2.2
July 9.7	42.53 .26	55.2 1.5	19.78 .30	12.6 0.7	10.49 .27	35.6 2.2
19.6	42.78 .23	53.7 1.3	20.07 .27	12.0 −0.4	10.74 .24	37.8 2.2
29.6	43.00 .20	52.5 1.1	20.32 .23	11.8 0.0	10.96 .20	40.0 2.2
Aug. 8.6	43.18 .16	51.5 0.9	20.53 .19	12.0 +0.3	11.15 .16	42.1 2.1
18.5	43.32 .12	50.7 0.6	20.70 .14	12.5 0.6	11.29 .12	44.1 1.9
28.5	43.42 .08	50.2 0.4	20.81 .09	13.2 0.9	11.40 .08	45.9 1.7
Sept. 7.5	43.47 +.03	50.0 −0.1	20.88 +.04	14.3 1.1	11.46 +.04	47.5 1.5
17.5	43.48 −.01	50.0 +0.1	20.90 .00	15.5 1.3	11.48 .00	48.9 1.3
27.4	43.46 .04	50.2 0.3	20.87 −.05	16.9 1.4	11.46 −.03	50.0 1.0
Oct. 7.4	43.40 .07	50.5 0.4	20.81 .08	18.4 1.5	11.41 .06	50.9 0.8
17.4	43.32 .10	51.0 0.5	20.71 .11	19.9 1.5	11.33 .09	51.6 0.5
27.4	43.21 .11	51.6 0.7	20.58 .14	21.3 1.4	11.23 .11	52.0 +0.3
Nov. 6.3	43.09 .13	52.3 0.7	20.43 .15	22.6 1.2	11.12 .12	52.1 0.0
16.3	42.96 .13	53.0 0.7	20.28 .16	23.7 1.0	10.99 .13	52.0 −0.2
26.3	42.83 .13	53.8 0.7	20.12 .16	24.7 0.8	10.85 .13	51.7 0.5
Dec. 6.2	42.70 .12	54.5 0.7	19.96 .15	25.3 0.5	10.72 .13	51.1 0.7
16.2	42.58 .11	55.2 0.7	19.81 .14	25.7 +0.3	10.59 .13	50.3 0.9
26.2	42.47 .10	55.8 0.6	19.68 .12	25.9 0.0	10.47 .11	49.3 1.0
36.2	42.38 −.08	56.4 +0.5	19.57 −.10	25.7 −0.3	10.36 −.10	48.2 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Piscium.		ι Piscium.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 21	° ′ 5 38	h m 23 33	° ′ 4 54	h m 23 52	° ′ 6 7
	s	″	s	″	s	″
Jan. 1.2	12.88 −.11	56.7 −0.9	6.30 −.11	21.3 −0.8	28.75 −.12	37.6 −0.9
11.2	12.78 .10	55.6 0.9	6.19 .10	20.4 0.9	28.63 .11	36.8 0.9
21.1	12.69 .08	54.9 0.9	6.10 .08	19.5 0.9	28.53 .10	35.9 0.9
31.1	12.62 .06	54.0 0.9	6.02 .07	18.6 0.8	28.44 .08	35.0 0.8
Feb. 10.1	12.57 .04	53.1 0.8	5.97 .06	17.9 0.7	28.36 .06	34.3 0.7
20.1	12.55 −.01	52.4 0.6	5.93 −.02	17.2 0.6	28.31 .04	33.6 0.6
Mar. 2.0	12.56 +.02	51.9 0.5	5.93 +.01	16.7 0.4	28.29 −.01	33.0 0.5
12.0	12.59 .06	51.5 −0.2	5.96 .04	16.4 −0.2	28.30 +.02	32.6 −0.3
22.0	12.67 .09	51.4 0.0	6.02 .08	16.3 0.0	28.34 .06	32.5 0.0
April 1.0	12.78 .13	51.5 +0.3	6.12 .12	16.4 +0.3	28.42 .10	32.6 +0.2
10.9	12.93 .17	51.9 0.6	6.26 .16	16.9 0.6	28.54 .14	33.0 0.5
20.9	13.12 .20	52.6 0.9	6.43 .19	17.6 0.9	28.70 .18	33.6 0.8
30.9	13.34 .24	53.7 1.1	6.65 .23	18.6 1.1	28.90 .21	34.5 1.1
May 10.8	13.59 .26	54.9 1.4	6.89 .26	19.9 1.4	29.13 .25	35.8 1.3
20.8	13.86 .28	56.4 1.6	7.16 .28	21.4 1.6	29.39 .27	37.2 1.6
30.8	14.15 .30	58.2 1.8	7.45 .30	23.1 1.8	29.67 .29	38.9 1.8
June 9.8	14.46 .30	60.0 1.9	7.75 .30	25.0 1.9	29.97 .30	40.7 1.9
19.7	14.76 .30	62.0 2.0	8.06 .30	26.9 2.0	30.28 .31	42.6 2.0
29.7	15.06 .29	64.1 2.0	8.36 .30	29.0 2.0	30.58 .30	44.7 2.0
July 9.7	15.35 .28	66.1 2.0	8.65 .28	31.0 2.0	30.88 .29	46.7 2.0
19.7	15.61 .25	68.1 1.9	8.92 .26	32.9 1.9	31.16 .27	48.6 1.9
29.6	15.85 .22	69.9 1.8	9.17 .23	34.7 1.8	31.41 .24	50.5 1.8
Aug. 8.6	16.05 .18	71.6 1.6	9.38 .20	36.4 1.6	31.64 .21	52.3 1.7
18.6	16.22 .15	73.2 1.5	9.56 .16	37.9 1.4	31.83 .17	53.8 1.5
28.5	16.34 .11	74.5 1.2	9.70 .12	39.2 1.2	31.99 .14	55.2 1.3
Sept. 7.5	16.43 .07	75.7 1.0	9.80 .08	40.3 1.0	32.11 .10	56.4 1.0
17.5	16.48 +.03	76.5 0.8	9.86 .04	41.1 0.7	32.18 .06	57.3 0.8
27.5	16.49 −.01	77.2 0.5	9.88 +.01	41.7 0.5	32.23 +.02	58.0 0.6
Oct. 7.4	16.46 .04	77.6 0.3	9.87 −.03	42.1 0.3	32.23 −.01	58.4 0.4
17.4	16.41 .07	77.8 +0.1	9.83 .06	42.3 +0.1	32.21 .04	58.7 +0.1
27.4	16.33 .09	77.8 −0.1	9.76 .08	42.2 −0.1	32.16 .06	58.7 −0.1
Nov. 6.4	16.23 .10	77.6 0.3	9.67 .10	42.0 0.3	32.09 .08	58.6 0.2
16.3	16.12 .12	77.3 0.4	9.57 .11	41.6 0.5	31.99 .10	58.2 0.4
26.3	16.00 .12	76.8 0.6	9.46 .12	41.1 0.6	31.89 .11	57.8 0.5
Dec. 6.3	15.88 .12	76.2 0.7	9.34 .12	40.5 0.7	31.78 .12	58.2 0.6
16.2	15.76 .12	75.4 0.8	9.22 .12	39.7 0.8	31.66 .12	56.5 0.7
26.2	15.64 .11	74.6 0.9	9.10 .11	38.9 0.8	31.54 .12	55.7 0.8
36.2	15.53 −.11	73.7 −1.0	8.99 −.11	38.0 −0.9	31.42 −.12	54.9 −0.8

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	HOURLY MOTION. Right Ascension.	HOURLY MOTION. Declination.	Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 1	18 47 29.95	21.66	−23 0 26.0	25.3	11.041	12.48	+ 3 49.80	16 18.38	1 11.08	18 43 31.22
2	18 51 45.78	46.57	22 55 12.5	11.5	11.027	13.63	4 18.67	18.38	11.03	18 47 27.78
3	18 56 10.26	11.13	22 49 31.6	30.4	11.012	14.77	4 46.00	18.37	10.98	18 51 24.34
4	19 0 34.36	35.32	22 43 23.5	22.2	10.995	15.90	5 13.56	18.36	10.93	18 55 20.89
5	19 4 58.05	59.09	22 36 48.4	46.9	10.977	17.02	5 40.69	18.34	10.87	18 59 17.45
6	19 9 21.29	22.42	22 29 46.5	44.7	10.958	18.13	6 7.37	18.32	10.81	19 3 14.01
7	19 13 44.05	45.25	22 22 17.9	15.8	10.937	19.24	6 33.58	18.29	10.74	19 7 10.56
8	19 18 6.30	7.57	22 14 22.9	20.6	10.916	20.33	6 59.28	18.26	10.67	19 11 7.12
9	19 22 28.01	29.36	22 5 61.7	59.1	10.893	21.42	7 24.45	18.23	10.60	19 15 3.68
10	19 26 49.17	50.59	21 57 14.6	11.7	10.869	22.49	7 49.06	18.19	10.52	19 19 0.23
11	19 31 9.73	11.22	21 47 61.9	58.6	10.843	23.55	8 13.07	18.15	10.44	19 22 56.79
12	19 35 29.67	31.22	21 38 23.9	20.3	10.817	24.60	8 36.46	18.10	10.36	19 26 53.35
13	19 39 48.97	50.58	21 28 20.8	16.9	10.790	25.64	8 59.21	18.05	10.28	19 30 49.90
14	19 44 7.60	9.27	21 17 52.8	48.6	10.762	26.67	9 21.29	17.99	10.19	19 34 46.46
15	19 48 25.55	27.28	21 6 60.3	55.8	10.733	27.69	9 42.69	17.92	10.10	19 38 43.01
16	19 52 42.81	44.60	20 55 43.6	38.8	10.704	28.70	10 3.39	17.85	10.00	19 42 39.57
17	19 56 59.36	61.20	20 43 63.0	57.9	10.674	29.69	10 23.38	17.78	9.90	19 46 36.13
18	20 1 15.18	17.08	20 31 58.8	53.4	10.644	30.67	10 42.64	17.70	9.80	19 50 32.68
19	20 5 30.27	32.22	20 19 31.4	25.5	10.613	31.62	11 1.16	17.61	9.70	19 54 29.24
20	20 9 44.61	46.61	20 6 41.0	34.8	10.582	32.57	11 18.94	17.52	9.60	19 58 25.79
21	20 13 58.20	60.24	19 53 28.1	21.6	10.551	33.50	11 35.97	17.42	9.50	20 2 22.35
22	20 18 11.03	13.10	19 39 52.9	46.0	10.519	34.42	11 52.24	17.31	9.39	20 6 18.91
23	20 22 23.08	25.21	19 25 55.7	48.5	10.487	35.33	12 7.75	17.19	9.28	20 10 15.46
24	20 26 34.36	36.53	19 11 37.0	29.5	10.454	36.22	12 22.48	17.07	9.17	20 14 12.02
25	20 30 44.87	47.06	18 56 57.2	49.4	10.421	37.09	12 36.43	16.95	9.06	20 18 8.57
26	20 34 54.59	56.81	18 41 56.6	48.5	10.388	37.95	12 49.59	16.83	8.95	20 22 5.13
27	20 39 3.52	5.77	18 26 35.5	27.1	10.355	38.80	13 1.95	16.70	8.84	20 26 1.68
28	20 43 11.66	13.93	18 10 54.4	45.6	10.322	39.62	13 13.53	16.57	8.73	20 29 58.24
29	20 47 19.00	21.29	17 54 53.7	44.6	10.289	40.43	13 24.32	16.43	8.62	20 33 54.79
30	20 51 25.54	27.85	17 38 33.8	24.5	10.256	41.22	13 34.30	16.29	8.50	20 37 51.35
31	20 55 31.28	33.61	17 21 55.0	45.4	10.223	42.00	13 43.47	16.14	8.39	20 41 47.90
Feb. 1	20 59 36.21	38.56	17 4 57.7	47.8	10.189	42.76	13 51.83	15.99	8.27	20 45 44.46
2	21 3 40.33	42.70	16 47 42.5	32.3	10.155	43.50	13 59.39	15.84	8.16	20 49 41.01
3	21 7 43.63	46.01	16 29 60.7	59.3	10.121	44.22	14 6.13	15.68	8.04	20 53 37.57
4	21 11 46.11	48.50	16 12 19.7	9.1	10.087	44.93	14 12.06	15.52	7.93	20 57 34.12
5	21 15 47.77	50.17	15 54 12.9	2.0	10.053	45.62	14 17.17	15.35	7.81	21 1 30.68
6	21 19 48.62	51.02	15 35 49.8	38.7	10.019	46.29	14 21.45	15.18	7.70	21 5 27.23
7	21 23 48.65	51.05	15 16 70.9	59.7	9.985	46.94	14 24.91	15.01	7.58	21 9 23.78
8	21 27 47.86	50.26	14 58 16.5	5.1	9.951	47.58	14 27.55	14.84	7.46	21 13 20.34
9	21 31 46.27	48.67	14 38 67.0	55.4	9.918	48.19	14 29.40	14.66	7.35	21 17 16.89
10	21 35 43.88	46.27	14 19 42.9	31.1	9.884	48.78	14 30.45	14.48	7.24	21 21 13.45
11	21 39 40.69	43.07	13 59 64.7	52.7	9.851	49.37	14 30.70	14.30	7.13	21 25 10.00
12	21 43 36.70	39.07	13 40 12.6	0.5	9.818	49.94	14 30.16	14.12	7.02	21 29 6.55
13	21 47 31.93	34.29	13 19 67.1	54.9	9.786	50.49	14 28.83	13.93	6.91	21 33 3.11
14	21 51 26.40	28.75	12 59 48.6	36.3	9.754	51.02	14 26.74	13.74	6.80	21 36 59.66
15	21 55 20.12	22.45	12 39 17.7	5.3	9.723	51.54	14 23.89	13.54	6.70	21 40 56.21
16	21 59 13.09	15.41	12 18 34.7	22.2	9.693	52.04	14 20.30	13.34	6.59	21 44 52.77
17	22 3 5.34	7.64	11 57 40.0	27.5	9.663	52.52	14 15.99	13.13	6.49	21 48 49.32
18	22 6 56.89	59.17	11 36 33.9	21.4	9.634	52.99	14 10.98	12.92	6.39	21 52 45.87
19	22 10 47.74	50.00	11 15 16.8	4.2	9.605	53.43	14 5.27	12.70	6.29	21 56 42.43
20	22 14 37.92	40.16	10 53 49.1	36.5	9.577	53.86	13 58.89	12.48	6.19	22 0 38.98
21	22 18 27.44	29.66	10 31 71.3	58.7	9.550	54.28	13 51.86	12.26	6.10	22 4 35.53
22	22 22 16.34	18.53	10 10 23.8	11.2	9.525	54.68	13 44.20	12.03	6.01	22 8 32.08
23	22 26 4.62	6.78	9 48 26.9	14.3	9.500	55.06	13 35.93	11.80	5.92	22 12 28.64
24	22 29 52.32	54.44	9 26 21.0	8.5	9.475	55.42	13 27.06	11.57	5.83	22 16 25.19
25	22 33 39.43	41.52	9 3 66.6	54.2	9.451	55.77	13 17.61	11.33	5.74	22 20 21.74
26	22 37 35.98	38.04	8 41 44.0	31.7	9.428	56.10	13 7.59	11.09	5.65	22 24 18.29
27	22 41 11.98	14.01	8 19 13.6	1.4	9.406	56.41	12 57.03	10.84	5.57	22 28 14.85
28	22 44 57.46	59.46	7 56 35.9	23.8	9.384	56.71	12 45.96	10.60	5.49	22 32 11.40
29	22 48 42.42	44.39	7 33 51.2	39.2	9.363	57.00	12 34.39	10.35	5.42	22 36 7.95
30	22 52 26.89	28.82	7 10 59.9	48.1	9.343	57.26	12 22.31	10.10	5.34	22 40 4.50
31	22 56 10.88	12.77	− 6 47 62.5	50.8	9.323	57.51	+12 9.74	16 9.85	1 5.27	22 44 1.06

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Mar. 1	22 48 42.42	44.39	− 7 33 51.2	39.2	9.363	57.00	+12 34.39	16 10.35	1 5.42	22 36 7.95
2	22 52 26.80	28.82	7 10 59.9	48.1	9.343	57.26	12 22.31	10.10	5.34	22 40 4.50
3	22 56 10.88	12.77	6 47 62.5	50.8	9.323	57.51	12 9.74	9.85	5.27	22 44 1.06
4	22 59 54.41	56.26	6 24 59.3	47.8	9.304	57.74	11 56.71	9.60	5.21	22 47 57.61
5	23 3 37.48	39.30	6 1 50.8	39.5	9.286	57.95	11 43.22	9.34	5.15	22 51 54.16
6	23 7 20.13	21.90	5 38 37.4	26.2	9.268	58.15	11 29.31	9.08	5.09	22 55 50.71
7	23 11 2.36	4.09	5 15 19.5	8.5	9.251	58.34	11 15.00	8.82	5.03	22 59 47.26
8	23 14 44.19	45.88	4 51 57.5	46.7	9.235	58.50	11 0.28	8.57	4.97	23 3 43.82
9	23 18 25.64	27.20	4 28 31.7	21.1	9.219	58.65	10 45.18	8.31	4.92	23 7 40.37
10	23 22 6.72	8.33	4 4 62.6	52.2	9.204	58.78	10 29.71	8.06	4.87	23 11 36.92
11	23 25 47.44	49.01	3 41 30.5	20.4	9.189	58.89	10 13.87	7.80	4.82	23 15 33.47
12	23 29 27.82	29.35	3 17 55.9	46.0	9.175	58.99	9 57.70	7.54	4.77	23 19 30.02
13	23 33 7.89	9.37	2 54 19.1	9.4	9.162	59.08	9 41.22	7.28	4.73	23 23 26.57
14	23 37 47.67	49.10	2 30 40.4	31.0	9.151	59.14	9 24.44	7.02	4.69	23 27 23.13
15	23 40 27.17	28.56	2 6 60.4	51.3	9.140	59.20	9 7.38	6.76	4.65	23 31 19.68
16	23 44 6.42	7.76	1 43 19.3	10.5	9.130	59.23	8 50.08	6.50	4.62	23 35 16.23
17	23 47 45.45	46.75	1 19 37.5	29.0	9.121	59.25	8 32.56	6.23	4.59	23 39 12.78
18	23 51 24.28	25.54	0 55 55.3	47.1	9.113	59.26	8 14.85	5.96	4.57	23 43 9.33
19	23 55 2.92	4.13	0 32 13.1	5.2	9.106	59.25	7 56.95	5.69	4.55	23 47 5.88
20	23 58 41.41	42.57	− 0 8 31.3	23.7	9.101	59.23	7 38.89	5.42	4.53	23 51 2.43
21	0 2 19.77	20.89	+ 0 15 9.9	17.2	9.096	59.20	7 20.70	5.14	4.51	23 54 58.99
22	0 5 58.02	59.09	0 38 50.1	57.1	9.092	59.15	7 2.40	4.86	4.49	23 58 55.54
23	0 9 36.19	37.21	1 2 28.9	35.6	9.089	59.08	6 44.02	4.58	4.48	0 2 52.09
24	0 13 14.30	15.28	1 26 6.0	12.4	9.087	59.00	6 25.58	4.30	4.47	0 6 48.64
25	0 16 52.37	53.31	1 49 41.0	47.1	9.086	58.91	6 7.11	4.02	4.46	0 10 45.19
26	0 20 30.44	31.32	2 13 13.6	19.4	9.086	58.83	5 48.63	3.74	4.46	0 14 41.75
27	0 24 8.50	9.33	2 36 43.5	48.9	9.086	58.68	5 30.14	3.45	4.46	0 18 38.30
28	0 27 46.59	47.38	3 0 10.3	15.3	9.088	58.55	5 11.68	3.17	4.46	0 22 34.85
29	0 31 24.74	25.48	3 23 33.7	38.4	9.091	58.40	4 53.28	2.88	4.47	0 26 31.40
30	0 35 2.96	3.65	3 46 53.3	57.7	9.094	58.23	4 34.95	2.60	4.48	0 30 27.95
31	0 38 41.25	41.90	4 10 8.7	12.8	9.098	58.05	4 16.70	2.31	4.49	0 34 24.51
Apr. 1	0 42 19.65	20.25	4 33 19.6	23.4	9.103	57.85	3 58.55	2.03	4.50	0 38 21.06
2	0 45 58.17	58.73	4 56 25.6	29.1	9.108	57.64	3 40.52	1.75	4.52	0 42 17.61
3	0 49 36.82	37.33	5 19 26.5	29.7	9.113	57.42	3 22.62	1.47	4.54	0 46 14.16
4	0 53 15.61	16.08	5 42 21.7	24.6	9.120	57.18	3 4.87	1.19	4.56	0 50 10.71
5	0 56 54.57	54.99	6 5 10.9	13.5	9.127	56.92	2 47.28	0.91	4.59	0 54 7.27
6	1 0 33.71	34.08	6 27 53.9	56.2	9.134	56.65	2 29.87	0.66	4.62	0 58 3.82
7	1 4 13.04	13.37	6 50 30.2	32.2	9.142	56.37	2 12.66	0.37	4.65	1 2 0.37
8	1 7 52.58	52.87	7 12 59.4	61.2	9.151	56.07	1 55.65	16 0.10	4.68	1 5 56.92
9	1 11 32.34	32.59	7 35 21.2	22.8	9.161	55.75	1 38.86	15 59.83	4.72	1 9 53.47
10	1 15 12.34	12.55	7 57 35.3	36.7	9.172	55.42	1 22.30	59.36	4.76	1 13 50.03
11	1 18 52.59	52.76	8 19 41.3	42.4	9.183	55.07	1 6.00	59.29	4.80	1 17 46.58
12	1 22 33.11	33.24	8 41 38.9	39.7	9.195	54.71	0 49.98	59.03	4.84	1 21 43.13
13	1 26 13.92	14.01	9 3 27.7	28.2	9.207	54.34	0 34.25	58.76	4.89	1 25 39.68
14	1 29 55.04	55.08	9 25 7.5	7.8	9.220	53.96	0 18.82	58.50	4.94	1 29 36.24
15	1 33 36.48	36.48	9 46 37.9	38.0	9.234	53.56	+ 0 3.70	58.23	4.99	1 33 32.79
16	1 37 18.25	18.22	10 7 58.5	58.4	9.248	53.15	− 0 11.08	57.97	5.05	1 37 29.34
17	1 41 0.39	0.32	10 29 9.0	8.7	9.263	52.73	0 25.50	57.71	5.10	1 41 25.89
18	1 44 42.90	42.80	10 50 9.1	8.6	9.280	52.28	0 39.53	57.45	5.16	1 45 22.45
19	1 48 25.81	25.67	11 10 58.6	57.9	9.297	51.83	0 53.17	57.19	5.22	1 49 19.00
20	1 52 9.13	8.96	11 31 37.0	36.1	9.314	51.37	1 6.40	56.93	5.28	1 53 15.55
21	1 55 52.89	52.68	11 52 4.1	3.1	9.332	50.89	1 19.21	56.67	5.34	1 57 12.11
22	1 59 37.09	36.85	12 12 19.5	18.3	9.351	50.39	1 31.56	56.41	5.40	2 1 8.66
23	2 3 21.75	21.48	12 32 23.0	21.6	9.371	49.89	1 43.44	56.15	5.47	2 5 5.21
24	2 7 6.88	6.58	12 52 14.2	12.7	9.392	49.37	1 54.85	55.89	5.54	2 9 1.77
25	2 10 52.50	52.17	13 11 52.7	51.1	9.413	48.83	2 5.77	55.63	5.61	2 12 58.32
26	2 14 38.63	38.27	13 31 18.4	16.6	9.434	48.29	2 16.20	55.38	5.68	2 16 54.87
27	2 18 25.28	24.90	13 50 30.8	28.9	9.455	47.74	2 26.12	55.13	5.75	2 20 51.43
28	2 22 12.45	12.05	14 9 20.7	27.7	9.477	47.17	2 35.50	54.88	5.83	2 24 47.98
29	2 25 60.15	59.73	14 28 14.7	12.6	9.499	46.58	2 44.34	54.63	5.90	2 28 44.53
30	2 29 48.38	47.93	14 46 45.5	43.3	9.521	45.98	2 52.67	54.39	5.98	2 32 41.09
31	2 33 37.15	36.68	+15 4 61.7	59.4	9.544	45.37	− 3 0.46	15 54.15	1 6.06	2 36 37.64

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap-parent Noon.	Mean Noon.	Ap-parent Noon.	Right Ascen-sion.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 1	2 33 37.15	36.68	+15 4 61.7	59.4	9.544	45.37	— 3 0.46	15 54.15	1 6.06	2 36 37.64
2	2 37 26.47	25.99	15 23 3.1	0.8	9.567	44.75	3 7.70	53.91	6.14	2 40 34.20
3	2 41 16.35	15.84	15 40 49.4	47.0	9.590	44.11	3 14.38	53.68	6.22	2 44 30.75
4	2 45 6.78	6.25	15 58 20.1	17.7	9.613	43.45	3 20.51	53.45	6.30	2 48 27.30
5	2 48 57.76	57.21	16 15 34.9	32.5	9.636	42.78	3 26.09	53.22	6.38	2 52 23.86
6	2 52 49.29	48.72	16 32 33.4	30.9	9.659	42.10	3 31.12	53.00	6.46	2 56 20.41
7	2 56 41.37	40.79	16 49 15.4	12.9	9.682	41.41	3 35.59	52.78	6.54	3 0 16.97
8	3 0 34.01	33.42	17 5 40.8	38.3	9.705	40.71	3 39.50	52.56	6.62	3 4 13.52
9	3 4 27.21	26.61	17 21 49.2	46.7	9.728	39.98	3 42.86	52.35	6.70	3 8 10.08
10	3 8 20.96	20.35	17 37 40.1	37.6	9.751	39.25	3 45.66	52.14	6.78	3 12 6.63
11	3 12 15.27	14.65	17 53 13.1	10.6	9.775	38.51	3 47.91	51.94	6.86	3 16 3.19
12	3 16 10.13	9.51	18 8 28.1	25.6	9.798	37.75	3 49.61	51.74	6.95	3 19 59.74
13	3 20 5.55	4.92	18 23 24.9	22.5	9.821	36.98	3 50.75	51.54	7.04	3 23 56.30
14	3 24 1.53	0.90	18 38 3.1	0.8	9.844	36.20	3 51.33	51.35	7.12	3 27 52.85
15	3 27 58.07	57.44	18 52 22.5	20.3	9.867	35.41	3 51.35	51.15	7.20	3 31 49.41
16	3 31 55.16	54.53	19 6 22.7	20.5	9.891	34.61	3 50.81	50.96	7.28	3 35 45.96
17	3 35 52.81	52.18	19 20 3.5	1.3	9.914	33.79	3 49.72	50.77	7.36	3 39 42.52
18	3 39 51.02	50.39	19 33 24.6	22.5	9.937	32.97	3 48.06	50.58	7.44	3 43 39.07
19	3 43 49.79	49.16	19 46 25.9	23.9	9.960	32.14	3 45.85	50.39	7.52	3 47 35.63
20	3 47 49.11	48.49	19 59 7.0	5.1	9.983	31.29	3 43.08	50.21	7.60	3 51 32.18
21	3 51 48.99	48.38	20 11 27.6	25.8	10.006	30.43	3 39.75	50.03	7.68	3 55 28.74
22	3 55 49.41	48.81	20 23 27.6	25.8	10.029	29.56	3 35.88	49.85	7.75	3 59 25.29
23	3 59 50.38	49.79	20 35 6.8	5.1	10.052	28.69	3 31.47	49.67	7.83	4 3 21.85
24	4 3 51.88	51.30	20 46 24.9	23.3	10.074	27.81	3 26.52	49.50	7.90	4 7 18.41
25	4 7 53.91	53.34	20 57 21.6	20.1	10.096	26.92	3 21.05	49.33	7.97	4 11 14.96
26	4 11 56.46	55.91	21 7 56.7	55.3	10.117	26.02	3 15.06	49.17	8.04	4 15 11.52
27	4 15 59.52	58.98	21 18 10.1	8.7	10.137	25.10	3 8.56	49.01	8.10	4 19 8.07
28	4 20 3.07	2.55	21 28 1.4	0.1	10.157	24.17	3 1.57	48.85	8.16	4 23 4.63
29	4 24 7.10	6.60	21 37 30.6	29.4	10.177	23.24	2 54.10	48.70	8.22	4 27 1.19
30	4 28 11.59	11.11	21 46 37.3	36.3	10.196	22.31	2 46.17	48.55	8.28	4 30 57.74
31	4 32 16.53	16.07	21 55 21.4	20.4	10.214	21.36	2 37 79	48.40	8.34	4 34 54.30
June 1	4 36 21.89	21.46	22 3 42.7	41.8	10.231	20.40	2 28.97	48.26	8.40	4 38 50.86
2	4 40 27.66	27.26	22 11 41.0	40.2	10.247	19.44	2 19.75	48.13	8.46	4 42 47.41
3	4 44 33.81	33.44	22 19 16.1	15.4	10.263	18.47	2 10.16	48.00	8.51	4 46 43.97
4	4 48 40.32	39.98	22 26 27.8	27.2	10.278	17.50	2 0.22	47.88	8.56	4 50 40.53
5	4 52 47.17	46.86	22 33 16.1	15.6	10.292	16.52	1 49.93	47.77	8.61	4 54 37.08
6	4 56 54.35	54.07	22 39 40.7	40.3	10.305	15.53	1 39.31	47.66	8.66	4 58 33.64
7	5 1 1.82	1.57	22 45 41.4	41.1	10.316	14.54	1 28.39	47.55	8.70	5 2 30.20
8	5 5 9.56	19.34	22 51 18.2	17.9	10.327	13.54	1 17.19	47.44	8.74	5 6 26.75
9	5 9 17.56	17.38	22 56 30.9	30.7	10.338	12.53	1 5.75	47.34	8.78	5 10 23.31
10	5 13 25.79	25.64	23 1 19.5	19.3	10.347	11.52	0 54.07	47.25	8.82	5 14 19.87
11	5 17 34.23	34.11	23 5 43.7	43.5	10.356	10.50	0 42.17	47.16	8.85	5 18 16.42
12	5 21 42.87	42.78	23 9 43.5	43.4	10.364	9.49	0 30.09	47.07	8.87	5 22 12.98
13	5 25 51.68	51.63	23 13 18.8	18.8	10.370	8.47	0 17.85	46.99	8.89	5 26 9.54
14	5 30 0.64	0.63	23 16 29.6	29.6	10.376	7.44	— 0 5.45	46.91	8.91	5 30 6.09
15	5 34 9.73	9.76	23 19 15.8	15.8	10.381	6.41	+ 0 7.09	46.83	8.93	5 34 2.65
16	5 38 18.94	19.00	23 21 37.3	37.3	10.385	5.38	0 19.74	46.75	8.95	5 37 59.21
17	5 42 28.24	28.34	23 23 34.1	34.1	10.388	4.35	0 32.49	46.68	8.96	5 41 55.76
18	5 46 37.61	37.74	23 25 6.1	6.1	10.391	3.32	0 45.30	46.62	8.97	5 45 52.32
19	5 50 47.04	47.21	23 26 13.3	13.3	10.393	2.28	0 58.17	46.56	8.98	5 49 48.88
20	5 54 56.51	56.72	23 26 55.8	55.8	10.394	1.25	1 11.08	46.50	8.98	5 53 45.43
21	5 59 5.99	6.24	23 27 13.5	13.5	10.395	0.21	1 24.02	46.44	8.98	5 57 41.99
22	6 3 15.47	15.75	23 27 6.3	6.3	10.395	0.82	1 36.95	46.38	8.98	6 1 38.55
23	6 7 24.93	25.25	23 26 34.3	34.2	10.394	1.85	1 49.85	46.33	8.97	6 5 35.10
24	6 11 34.34	34.70	23 25 37.6	37.4	10.391	2.88	2 2.71	46.28	8.96	6 9 31.66
25	6 15 43.67	44.07	23 24 16.2	16.0	10.387	3.91	2 15.48	46.24	8.94	6 13 28.22
26	6 19 52.91	53.34	23 22 30.1	29.9	10.383	4.94	2 28.15	46.20	8.92	6 17 24.78
27	6 24 2.02	2.49	23 20 19.3	19.1	10.377	5.96	2 40.71	46.17	8.90	6 21 21.33
28	6 28 10.99	11.49	23 17 43.9	43.6	10.370	6.98	2 53.12	46.15	8.87	6 25 17.89
29	6 32 19.79	20.32	23 14 44.0	43.6	10.362	8.00	3 5.36	46.13	8.84	6 29 14.45
30	6 36 28.39	28.96	23 11 19.7	19.3	10.354	9.02	3 17.41	46.12	8.81	6 33 11.00
31	6 40 36.76	37.37	+23 7 31.0	30.5	10.344	10.03	+ 3 29.23	15 46.11	1 8.78	6 37 7.56

NOTE.—For Mean Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 40 36.76	37.37	+23 7 31.0	30.5	10.344	10.03	+ 3 29.23	15 46.11	1 8.78	6 37 7.56
2	6 44 44.89	45.53	23 3 18.1	17.4	10.332	11.04	3 40.80	46.10	8.75	6 41 4.12
3	6 48 52.74	53.41	22 58 41.0	40.2	10.320	12.04	3 52.09	46.10	8.71	6 45 0.67
4	6 53 0.29	0.99	22 53 39.9	39.0	10.307	13.04	4 3.10	46.11	8.67	6 48 57.23
5	6 57 7.52	8.25	22 48 14.9	13.9	10.293	14.04	4 13.77	46.12	8.62	6 52 53.79
6	7 1 14.49	15.16	22 42 26.1	25.0	10.279	15.03	4 24.10	46.14	8.57	6 56 50.34
7	7 5 20.91	21.69	22 36 13.7	12.5	10.262	16.01	4 34.05	46.17	8.52	7 0 46.90
8	7 9 27.03	27.83	22 29 37.9	36.6	10.245	16.98	4 43.62	46.20	8.47	7 4 43.46
9	7 13 32.74	33.56	22 22 38.7	37.3	10.228	17.95	4 52.77	46.23	8.42	7 8 40.01
10	7 17 38.02	38.87	22 15 16.4	14.9	10.210	18.91	5 1.49	46.27	8.36	7 12 36.57
11	7 21 42.86	43.73	22 7 31.1	29.4	10.192	19.86	5 9.77	46.31	8.30	7 16 33.13
12	7 25 27.25	48.14	21 59 22.9	21.0	10.173	20.81	5 17.61	46.35	8.24	7 20 29.68
13	7 29 51.16	52.07	21 50 52.2	50.2	10.153	21.75	5 24.96	46.40	8.17	7 24 26.24
14	7 33 54.59	55.52	21 41 59.0	56.9	10.132	22.68	5 31.82	46.45	8.10	7 28 22.80
15	7 37 57.52	58.47	21 32 43.6	41.4	10.111	23.59	5 38.20	46.51	8.03	7 32 19.35
16	7 41 59.95	60.92	21 23 6.2	3.9	10.090	24.50	5 44.08	46.57	7.96	7 36 15.91
17	7 46 1.88	2.86	21 13 7.0	4.6	10.069	25.41	5 49.45	46.63	7.88	7 40 12.46
18	7 50 3.29	4.28	21 2 46.1	43.5	10.048	26.31	5 54.30	46.70	7.81	7 44 9.02
19	7 54 4.17	5.17	20 52 3.8	1.1	10.026	27.20	5 58.62	46.77	7.73	7 48 5.58
20	7 58 4.52	5.53	20 40 60.4	57.6	10.004	28.08	6 2.41	46.84	7.65	7 52 2.13
21	8 2 4.33	5.35	20 29 36.1	33.2	9.981	28.94	6 5.66	46.91	7.57	7 55 58.69
22	8 6 3.60	4.62	20 17 51.0	47.9	9.958	29.80	6 8.38	46.99	7.49	7 59 55.24
23	8 10 2.32	3.32	20 5 45.5	42.3	9.935	30.65	6 10.54	47.07	7.41	8 3 51.80
24	8 14 0.48	1.50	19 53 19.9	16.7	9.912	31.48	6 12.14	47.16	7.33	8 7 48.36
25	8 17 58.07	59.09	19 40 34.4	31.1	9.888	32.30	6 13.17	47.25	7.24	8 11 44.91
26	8 21 55.09	56.11	19 27 29.1	25.7	9.864	33.11	6 13.63	47.34	7.16	8 15 41.47
27	8 25 51.53	52.55	19 14 4.5	1.0	9.840	33.92	6 13.52	47.44	7.07	8 19 38.02
28	8 29 47.39	48.41	19 0 20.7	17.1	9.816	34.72	6 12.82	47.55	6.99	8 23 34.58
29	8 33 42.67	43.68	18 46 18.1	14.4	9.791	35.49	6 11.53	47.66	6.90	8 27 31.13
30	8 37 37.36	38.36	18 31 56.9	53.2	9.766	36.26	6 9.66	47.78	6.82	8 31 27.69
31	8 41 31.44	32.44	18 17 17.5	13.8	9.741	37.02	6 7.20	47.90	6.73	8 35 24.24
Aug. 1	8 45 24.92	25.91	18 2 20.2	16.5	9.715	37.77	6 4.13	48.03	6.65	8 39 20.79
2	8 49 17.79	18.76	17 47 5.1	1.4	9.689	38.49	6 0.43	48.16	6.56	8 43 17.35
3	8 53 10.04	11.00	17 31 32.7	28.8	9.664	39.21	5 56.12	48.29	6.48	8 47 13.90
4	8 57 1.67	2.62	17 15 43.1	39.2	9.638	39.92	5 51.20	48.43	6.39	8 51 10.46
5	9 0 52.70	53.63	16 59 36.8	32.9	9.613	40.61	5 45.67	48.58	6.31	8 55 7.02
6	9 4 43.11	44.02	16 43 14.0	10.1	9.587	41.28	5 39.52	48.73	6.22	8 59 3.57
7	9 8 32.90	33.79	16 26 35.1	31.2	9.562	41.95	5 32.75	48.88	6.14	9 3 0.12
8	9 12 22.08	22.95	16 9 40.3	36.5	9.538	42.61	5 25.38	49.04	6.05	9 6 56.68
9	9 16 10.67	11.52	15 52 29.9	26.1	9.513	43.25	5 17.42	49.20	5.96	9 10 53.23
10	9 19 58.67	59.49	15 35 4.2	0.4	9.488	43.88	5 8.86	49.37	5.88	9 14 49.79
11	9 23 46.08	46.87	15 17 23.6	19.9	9.463	44.50	4 59.72	49.54	5.80	9 18 46.34
12	9 27 32.92	33.68	14 59 28.4	24.8	9.439	45.10	4 50.00	49.71	5.72	9 22 42.90
13	9 31 19.19	19.92	14 41 18.9	15.3	9.416	45.69	4 39.72	49.88	5.64	9 26 39.45
14	9 35 4.90	5.60	14 22 55.3	51.8	9.393	46.27	4 28.88	50.06	5.56	9 30 36.00
15	9 38 50.07	50.74	14 4 17.9	14.5	9.371	46.84	4 17.49	50.24	5.48	9 34 32.56
16	9 42 34.71	35.34	13 45 27.0	23.7	9.349	47.40	4 5.58	50.42	5.40	9 38 29.11
17	9 46 18.84	19.44	13 36 23.0	19.8	9.329	47.93	3 53.16	50.60	5.32	9 42 25.66
18	9 50 2.47	3.04	13 7 6.1	3.1	9.309	48.46	3 40.24	50.78	5.25	9 46 22.22
19	9 53 45.61	46.15	12 47 36.7	33.8	9.289	48.98	3 26.83	50.97	5.17	9 50 18.77
20	9 57 28.28	28.78	12 27 55.1	52.4	9.269	49.48	3 12.95	51.16	5.10	9 54 15.32
21	10 1 10.49	10.95	12 7 61.5	59.0	9.250	49.97	2 58.60	51.35	5.03	9 58 11.88
22	10 4 52.26	52.68	11 47 56.2	53.9	9.231	50.45	2 43.81	51.54	4.97	10 2 8.43
23	10 8 33.60	33.98	11 27 39.7	37.5	9.213	50.92	2 28.60	51.74	4.90	10 6 4.98
24	10 12 14.53	14.87	11 7 12.2	10.2	9.195	51.36	2 12.98	51.94	4.84	10 10 1.54
25	10 15 55.05	55.35	10 46 34.1	32.4	9.179	51.80	1 56.95	52.15	4.78	10 13 58.09
26	10 19 35.17	35.43	10 25 45.6	44.2	9.163	52.22	1 40.51	52.36	4.72	10 17 54.64
27	10 23 14.91	15.13	10 4 47.2	45.9	9.149	52.63	1 23.70	52.57	4.66	10 21 51.20
28	10 26 54.29	54.46	9 43 39.0	38.0	9.132	53.03	1 6.53	52.79	4.61	10 25 47.75
29	10 30 33.31	33.43	9 22 21.5	20.8	9.118	53.42	0 49.00	53.01	4.56	10 29 44.30
30	10 34 11.98	12.06	9 0 55.1	54.7	9.104	53.79	0 31.13	53.24	4.51	10 33 40.85
31	10 37 50.32	50.35	+ 8 39 20.0	19.8	9.090	54.14	+ 0 12.92	15 53.47	1 4.46	10 37 37.41

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Sept. 1	10 41 28.34	28.33	+ 8 17 36.5	36.6	9.077	54.48	— 0 5.60	15 53.70	1 4.42	10 41 33.96
2	10 45 6.06	6.00	7 55 45.1	45.5	9.064	54.81	0 24.43	53.93	4.37	10 45 30.51
3	10 48 43.48	43.37	7 33 46.0	46.7	9.053	55.11	0 43.56	54.17	4.33	10 49 27.06
4	10 52 20.62	20.46	7 11 39.6	40.6	9.042	55.41	1 2.97	54.41	4.29	10 53 23.62
5	10 55 57.50	57.29	6 49 26.2	27.5	9.031	55.70	1 22.63	54.66	4.26	10 57 20.17
6	10 59 34.13	33.87	6 27 6.2	7.8	9.021	55.97	1 42.54	54.91	4.23	11 1 16.72
7	11 3 10.54	10.23	6 4 39.9	41.8	9.012	56.22	2 2.68	55.16	4.20	11 5 13.27
8	11 6 46.74	46.38	5 42 7.6	9.9	9.004	56.47	2 23.03	55.41	4.17	11 9 9.83
9	11 10 22.75	22.34	5 19 29.6	32.2	8.997	56.70	2 43.57	55.66	4.15	11 13 6.38
10	11 13 58.60	58.14	4 56 46.3	49.3	8.991	56.91	3 4.27	55.92	4.13	11 17 2.93
11	11 17 34.30	33.79	4 33 58.0	61.3	8.985	57.11	3 25.11	56.18	4.11	11 20 59.48
12	11 21 9.88	9.32	4 11 4.9	8.5	8.980	57.30	3 46.08	56.44	4.09	11 24 56.03
13	11 24 45.36	44.75	3 48 7.4	11.3	8.976	57.48	4 7.16	56.70	4.08	11 28 52.58
14	11 28 20.77	20.10	3 25 5.8	10.1	8.974	57.64	4 28.31	56.95	4.07	11 32 49.14
15	11 31 56.11	55.39	3 2 0.5	5.2	8.972	57.79	4 49.50	57.21	4.06	11 36 45.69
16	11 35 31.43	30.66	2 38 51.7	56.8	8.971	57.93	5 10.72	57.47	4.06	11 40 42.24
17	11 39 6.74	5.92	2 15 39.8	45.2	8.971	58.05	5 31.96	57.73	4.06	11 44 38.79
18	11 42 42.08	41.20	1 52 25.1	30.8	8.972	58.16	5 53.18	58.99	4.06	11 48 35.35
19	11 46 17.45	16.52	1 29 7.9	14.0	8.975	58.26	6 14.35	58.25	4.06	11 52 31.90
20	11 49 52.89	51.91	1 5 48.5	55.0	8.978	58.35	6 35.45	58.51	4.07	11 56 28.45
21	11 53 28.40	27.37	0 42 27.3	34.1	8.982	58.41	6 56.48	58.77	4.08	12 0 25.00
22	11 57 4.02	2.93	+ 0 19 4.6	11.7	8.987	58.47	7 17.41	59.03	4.09	12 4 21.55
23	12 0 39.76	38.61	— 0 4 19.3	11.8	8.992	58.51	7 38.22	59.30	4.11	12 8 18.10
24	12 4 15.64	14.44	0 27 44.0	36.2	8.999	58.53	7 58.89	59.56	4.13	12 12 14.66
25	12 7 51.68	50.43	0 51 9.1	1.0	9.006	58.55	8 19.40	15 59.83	4.15	12 16 11.21
26	12 11 27.90	26.60	1 14 34.3	25.8	9.014	58.54	8 39.73	16 0.10	4.18	12 20 7.76
27	12 15 4.32	2.97	1 37 59.3	50.5	9.022	58.52	8 59.86	0.37	4.21	12 24 4.31
28	12 18 40.95	39.55	2 1 23.7	14.6	9.031	58.49	9 19.77	0.64	4.24	12 28 0.86
29	12 22 17.80	16.35	2 24 47.1	37.7	9.041	58.45	9 39.47	0.92	4.28	12 31 57.41
30	12 25 54.90	53.39	2 47 69.1	59.4	9.051	58.38	9 58.93	1.20	4.32	12 35 53.97
Oct. 1	12 29 32.25	30.69	3 11 29.3	19.3	9.062	58.30	10 18.12	1.48	4.36	12 39 50.52
2	12 33 9.88	8.27	3 34 47.4	37.1	9.074	58.20	10 37.04	1.76	4.40	12 43 47.07
3	12 36 47.81	46.15	3 57 63.1	52.6	9.087	58.09	10 55.66	2.05	4.45	12 47 43.62
4	12 40 26.05	24.35	4 21 16.0	5.2	9.100	57.97	11 13.97	2.34	4.50	12 51 40.17
5	12 44 4.63	2.88	4 44 25.6	14.5	9.114	57.83	11 31.94	2.62	4.55	12 55 36.72
6	12 47 43.56	41.76	5 7 31.7	20.4	9.129	57.67	11 49.57	2.90	4.61	12 59 33.28
7	12 51 22.86	21.01	5 30 33.7	22.2	9.145	57.49	12 6.82	3.18	4.67	13 3 29.83
8	12 55 2.55	0.65	5 53 31.4	19.6	9.162	57.30	12 23.67	3.46	4.73	13 7 26.38
9	12 58 42.66	40.72	6 16 24.5	12.5	9.180	57.10	12 40.12	3.74	4.80	13 11 22.93
10	13 2 23.20	21.22	6 39 12.6	0.3	9.199	56.89	12 56.13	4.02	4.87	13 15 19.48
11	13 6 4.20	2.18	7 1 55.2	42.7	9.218	56.66	13 11.69	4.30	4.94	13 19 16.04
12	13 9 45.69	43.62	7 24 32.1	19.5	9.239	56.41	13 26.76	4.58	5.01	13 23 12.59
13	13 13 27.67	25.56	7 46 62.9	50.1	9.260	56.15	13 41.33	4.85	5.09	13 27 9.14
14	13 17 10.17	8.02	8 9 27.2	14.2	9.283	55.88	13 55.38	5.13	5.17	13 31 5.69
15	13 20 53.23	51.03	8 31 44.7	31.6	9.306	55.58	14 8.88	5.40	5.25	13 35 2.25
16	13 24 36.86	34.62	8 53 55.0	41.8	9.330	55.27	14 21.80	5.67	5.33	13 38 58.80
17	13 28 21.08	18.81	9 15 57.7	44.4	9.356	54.95	14 34.13	5.94	5.42	13 42 55.35
18	13 32 5.91	3.60	9 37 52.4	39.0	9.382	54.61	14 45.85	6.21	5.51	13 46 51.90
19	13 35 51.37	49.02	9 59 38.8	25.3	9.408	54.25	14 56.95	6.47	5.60	13 50 48.46
20	13 39 37.48	35.09	10 21 16.5	2.9	9.435	53.88	15 7.41	6.74	5.69	13 54 45.01
21	13 43 24.25	21.83	10 42 45.2	31.5	9.462	53.50	15 17.21	7.00	5.79	13 58 41.56
22	13 47 11.71	9.26	11 3 64.4	50.7	9.491	53.09	15 26.31	7.26	5.88	14 2 38.12
23	13 50 59.86	57.38	11 25 13.7	0.0	9.520	52.67	15 34.72	7.52	5.98	14 6 34.67
24	13 54 48.70	46.20	11 45 72.8	59.1	9.549	52.24	15 42.43	7.78	6.08	14 10 31.22
25	13 58 38.25	35.73	12 6 61.1	47.4	9.580	51.79	15 49.43	8.04	6.18	14 14 27.77
26	14 2 28.54	25.99	12 27 38.3	24.6	9.611	51.32	15 55.71	8.30	6.28	14 18 24.33
27	14 6 19.57	17.00	12 47 64.0	50.4	9.642	50.82	16 1.24	8.56	6.39	14 22 20.88
28	14 10 11.35	8.76	13 8 17.8	4.3	9.673	50.31	16 6.02	8.82	6.50	14 26 17.43
29	14 14 3.88	1.27	13 28 19.2	5.8	9.705	49.78	16 10.05	9.08	6.61	14 30 13.99
30	14 17 57.17	54.54	13 47 67.9	54.6	9.737	49.24	16 13.31	9.34	6.72	14 34 10.54
31	14 21 51.24	48.59	14 7 43.3	30.1	9.769	48.69	16 15.81	9.59	6.83	14 38 7.10
32	14 25 46.08	43.42	—14 26 65.1	52.0	9.801	48.12	—16 17.55	16 9.84	1 6.94	14 42 3.65

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 1	14 25 46.08	43.42	—14 26 65.1	52.0	9.801	48.12	—16 17.55	16 9.84	1 6.94	14 42 3.65
2	14 29 41.70	39.03	14 45 72.9	59.9	9.834	47.52	16 18.50	9.09	7.06	14 46 0.20
3	14 33 38.11	35.43	15 4 66.2	53.4	9.867	46.91	16 18.65	10.34	7.18	14 49 56.76
4	14 37 35.32	32.63	15 23 44.6	32.0	9.900	46.28	16 18.00	10.59	7.30	14 53 53.31
5	14 41 33.33	30.64	15 41 67.8	55.4	9.933	45.63	16 16.54	10.84	7.42	14 57 49.87
6	14 45 32.15	29.45	16 0 15.2	3.0	9.967	44.97	16 14.29	11.08	7.54	15 1 46.42
7	14 49 31.78	29.08	16 17 66.6	54.6	10.001	44.29	16 11.22	11.32	7.66	15 5 42.97
8	14 53 32.25	29.55	16 35 41.4	29.7	10.036	43.60	16 7.32	11.56	7.78	15 9 39.53
9	14 57 33.55	30.85	16 52 59.3	47.8	10.071	42.89	16 2.59	11.79	7.90	15 13 36.08
10	15 1 35.63	32.99	17 9 60.0	48.8	10.106	42.16	15 57.02	12.02	8.02	15 17 32.64
11	15 5 38.65	35.97	17 26 43.0	32.1	10.141	41.42	15 50.60	12.25	8.14	15 21 29.19
12	15 9 42.48	39.81	17 42 67.9	57.3	10.177	40.66	15 43.34	12.47	8.26	15 25 25.75
13	15 13 47.16	44.51	17 59 14.4	4.1	10.212	39.88	15 35.22	12.69	8.38	15 29 22.30
14	15 17 52.70	50.07	18 14 62.1	52.1	10.248	39.09	15 26.24	12.90	8.49	15 33 18.86
15	15 21 59.10	56.48	18 30 30.6	20.9	10.283	38.27	15 16.40	13.10	8.61	15 37 15.41
16	15 26 6.35	3.75	18 45 39.5	30.1	10.319	37.45	15 5.72	13.30	8.73	15 41 11.97
17	15 30 14.46	11.89	19 0 28.5	19.4	10.355	36.61	14 54.18	13.50	8.85	15 45 8.52
18	15 34 23.42	20.88	19 14 57.0	48.3	10.390	35.75	14 41.78	13.70	8.96	15 49 5.08
19	15 38 33.22	30.71	19 28 64.9	56.5	10.425	34.88	14 28.54	13.89	9.07	15 53 1.63
20	15 42 43.87	41.39	19 42 51.7	43.6	10.460	34.00	14 14.46	14.08	9.18	15 56 58.19
21	15 46 55.35	52.90	19 56 17.1	9.3	10.495	33.10	13 59.55	14.27	9.29	16 0 54.75
22	15 51 7.61	5.23	20 9 20.7	13.3	10.529	32.18	13 43.81	14.45	9.40	16 4 51.30
23	15 56 20.74	18.37	20 21 62.1	55.1	10.562	31.25	13 27.26	14.63	9.51	16 8 47.86
24	15 59 34.64	32.31	20 34 21.0	14.4	10.595	30.30	13 9.92	14.81	9.61	16 12 44.41
25	16 3 49.31	47.03	20 46 17.0	10.8	10.628	29.34	12 51.80	14.99	9.72	16 16 40.97
26	16 8 4.74	2.51	20 57 49.8	43.9	10.659	28.37	12 32.93	15.16	9.82	16 20 37.52
27	16 12 20.91	18.73	21 8 59.1	53.5	10.689	27.39	12 13.33	15.33	9.92	16 24 34.08
28	16 16 37.79	35.67	21 19 44.4	39.2	10.718	26.39	11 53.01	15.50	10.02	16 28 30.64
29	16 20 55.37	53.30	21 30 5.4	0.6	10.747	25.37	11 31.99	15.66	10.12	16 32 27.19
30	16 25 13.61	11.60	21 39 61.9	57.4	10.774	24.34	11 10.30	15.82	10.21	16 36 23.75
Dec. 1	16 29 32.49	30.55	21 49 33.6	29.4	10.800	23.30	10 47.97	15.98	10.30	16 40 20.31
2	16 33 52.00	50.13	21 58 40.1	36.3	10.825	22.25	10 25.02	16.13	10.39	16 44 16.86
3	16 38 12.11	10.31	22 7 21.1	17.6	10.850	21.18	10 1.46	16.28	10.47	16 48 13.42
4	16 42 32.80	31.06	22 15 36.3	33.1	10.874	20.10	9 37.33	16.42	10.55	16 52 9.98
5	16 46 54.05	52.38	22 23 25.6	22.7	10.897	19.01	9 12.65	16.56	10.63	16 56 6.53
6	16 51 15.82	14.23	22 30 48.8	46.2	10.919	17.92	8 47.44	16.70	10.70	17 0 3.09
7	16 55 38.10	36.58	22 37 45.6	43.3	10.939	16.82	8 21.71	16.83	10.77	17 3 59.65
8	16 59 60.85	59.41	22 44 15.8	13.8	10.958	15.70	7 55.50	16.95	10.83	17 7 56.20
9	17 4 24.05	22.69	22 50 19.1	17.4	10.977	14.58	7 28.84	17.07	10.89	17 11 52.76
10	17 8 47.69	46.41	22 55 55.4	53.8	10.994	13.45	7 1.76	17.19	10.95	17 14 49.32
11	17 13 11.74	10.54	23 1 4.5	3.1	11.110	12.31	6 34.27	17.30	11.00	17 19 45.87
12	17 17 36.17	35.05	23 5 46.1	44.9	11.025	11.17	6 6.39	17.40	11.05	17 23 42.43
13	17 21 60.95	59.91	23 9 60.2	59.2	11.040	10.02	5 38.16	17.50	11.10	17 27 38.99
14	17 26 26.05	25.10	23 13 46.7	45.9	11.053	8.87	5 9.60	17.59	11.14	17 31 35.54
15	17 30 51.45	50.59	23 17 5.5	4.9	11.064	7.71	4 40.75	17.67	11.18	17 35 32.10
16	17 35 17.13	16.36	23 19 56.3	55.9	11.075	6.54	4 11.62	17.75	11.21	17 39 28.66
17	17 39 43.04	42.36	23 22 19.1	18.8	11.084	5.37	3 42.25	17.82	11.23	17 43 25.22
18	17 44 9.16	8.57	23 24 13.8	13.6	11.092	4.20	3 12.68	17.88	11.25	17 47 21.77
19	17 48 35.45	34.95	23 25 40.4	40.3	11.098	3.03	2 42.94	17.94	11.27	17 51 18.33
20	17 53 1.87	1.46	23 26 38.9	38.9	11.103	1.85	2 13.07	18.00	11.28	17 55 14.89
21	17 57 28.40	28.08	23 27 9.1	9.1	11.106	0.67	1 43.09	18.06	11.29	17 59 11.45
22	18 1 55.00	54.78	23 27 10.9	10.9	11.108	0.51	1 13.03	18.11	11.30	18 3 8.00
23	18 6 21.63	21.50	23 26 44.4	44.4	11.108	1.69	0 42.94	18.16	11.30	18 7 4.56
24	18 10 48.25	48.21	23 25 49.7	49.7	11.107	2.86	— 0 12.87	18.20	11.29	18 11 1.12
25	18 15 14.82	14.87	23 24 26.8	26.8	11.105	4.04	+ 0 17.16	18.24	11.28	18 14 57.67
26	18 19 41.31	41.45	23 22 35.7	35.7	11.101	5.21	0 47.09	18.27	11.27	18 18 54.23
27	18 24 7.67	7.91	23 20 16.4	16.3	11.095	6.39	1 16.91	18.30	11.25	18 22 50.79
28	18 28 33.86	34.20	23 17 28.9	28.7	11.087	7.56	1 46.56	18.32	11.23	18 26 47.34
29	18 32 59.86	60.28	23 14 13.4	13.1	11.078	8.72	2 16.00	18.34	11.20	18 30 43.90
30	18 37 25.61	26.11	23 10 30.0	29.5	11.067	9.88	2 45.19	18.36	11.17	18 34 40.46
31	18 41 51.09	51.68	23 6 18.7	18.1	11.055	11.04	3 14.11	18.38	11.14	18 38 37.02
32	18 46 16.27	16.95	—23 1 39.7	39.0	11.042	12.19	+ 3 42.75	16 18.39	1 11.10	18 42 33.57

Note. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

WASHINGTON MERIDIAN.

Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan. 1	21 26.59	1.924	63.65		II.	Mar. 1	21 12.20	2.011	64.98		II.
2	22 13.26	1.963	64.19		II.	2	22 0.54	2.015	64.97		II.
3	23 0.80	1.992	64.60		II.	3	22 48.92	2.017	64.92		II.
4	23 48.88	2.005	64.79		II.	4	23 37.36	2.023	64.98		II.
6	0 37.06	2.002	64.71		I.	6	0 26.02	2.040	65.24		I.
7	1 24.96	1.987	64.51		I.	7	1 15.29	2.074	65.75		I.
8	2 12.42	1.968	64.25		I.	8	2 5.58	2.125	66.58		I.
9	2 59.41	1.955	64.12		I.	9	2 57.30	2.190	67.62		I.
10	3 46.30	1.962	64.24	165 .. 168	I.	10	3 50.75	2.266	68.85	15 .. 18	I.
11	4 33.60	1.993	64.73	173 .. 2	I.	11	4 46.07	2.337	69.97	22 .. 25	I.
12	5 21.96	2.052	65.69	3 .. 6	I.	12	5 42.92	2.386	70.76	29 .. 32	I.
13	6 12.12	2.144	67.11	9 .. 12	I.	13	6 40.61	2.402	71.01	34 .. 37	I.
14	7 4.86	2.260	68.85	12 .. 15	I.	14	7 38.22	2.378	70.58	39 .. 42	I.
15	8 0.58	2.382	70.66	19 .. 22	I.	15	8 34.71	2.317	69.63	51 .. 54	I.
16	8 59.20	2.487	72.16	27 .. 30	I.	16	9 29.47	2.236	68.32	60 .. 63	I.
17	9 59.95	2.544	72.97	33 .. 36	I.	17	10 22.03	2.148	66.92	68 .. 71	I.
18	11 1.34	2.537	72.81	38 .. 41	I.	18	11 12 54	2.069	65.67	76 .. 79	I.
19	12 1.75	2.466	71.73	48 .. 51	I.	19	12 1.34	2.006	64.67	83 .. 86	I.
20	12 59.69	2.347	69.97	60 .. 63	II.	20	12 48.84	1.961	63.98	90 .. 93	II.
21	13 54.42	2.213	67.97	65 .. 68	II.	21	13 35.51	1.936	63.65	98 .. 101	II.
22	14 45.92	2.089	66.13	75 .. 78	II.	22	14 21.77	1.927	63.60	106 .. 109	II.
23	15 34.69	1.990	64.66	83 .. 86	II.	23	15 7.98	1.931	63.75	109 .. 112	II.
24	16 21.42	1.920	63.65	90 .. 93	II.	24	15 54.47	1.944	64.01	114 .. 117	II.
25	17 6.87	1.882	63 10	98 .. 101	II.	25	16 41.37	1.961	64.31	123 .. 126	II.
26	17 51.77	1.874	62.97	106 .. 109	II.	26	17 28.58	1.972	64.56	128 .. 131	II.
27	18 36.73	1.883	63.17	109 .. 112	II.	27	18 16.03	1.981	64.71	134 .. 137	II.
28	19 22.18	1.911	63.57	113 .. 116	II.	28	19 3.66	1.986	64.77	141 .. 144	II.
29	20 8.44	1.945	64.07	122 .. 125	II.	29	19 51 36	1.989	64.77	147 .. 150	II.
30	20 55.56	1.978	64.54		II.	30	20 39.15	1.996	64.84		II.
31	21 43.40	2.003	64.86		II.	31	21 27.16	2.010	65.02		II.
Feb. 1	22 31.69	2.015	64.97		II.	Apr. 1	22 15.65	2.038	65.37		II.
2	23 20.14	2.015	64.90		II.	2	23 4.98	2.082	65.94		II.
4	0 8.41	2.005	64.73		I.	3	23 55.61	2.145	66.85		II.
5	0 56.38	1.994	64.55		I.	5	0 47.94	2.223	68.05		I.
6	1 44.14	1.991	64.51		I.	6	1 42.31	2.308	69.36		I.
7	2 31.96	2.003	64.76		I.	7	2 38.73	2.383	70.53		I.
8	3 20.29	2.037	65.34		I.	8	3 36.71	2.430	71.34	27 .. 30	I.
9	4 9.76	2.098	66.30	7 .. 10	I.	9	4 35.38	2.438	71.53	32 .. 35	I.
10	5 0.99	2.180	67.60	11 .. 14	I.	10	5 33.72	2.402	70.99	38 .. 41	I.
11	5 54.41	2.274	69.07	17 .. 20	I.	11	6 30.66	2.326	69.87	46 .. 49	I.
12	6 50.16	2.366	70.46	24 .. 27	I.	12	7 25.40	2.231	68.41	58 .. 61	I.
13	7 47.97	2.433	71.42	31 .. 34	I.	13	8 17.73	2.133	66.89	66 .. 69	I.
14	8 46.97	2.457	71.71	36 .. 39	I.	14	9 7.79	2 048	65.50	72 .. 75	I.
15	9 45.93	2.431	71.25	44 .. 47	I.	15	9 56.06	1.984	64.43	82 .. 85	I.
16	10 43.65	2.359	70.13	55 .. 58	I.	16	10 43.05	1.942	63.74	85 .. 88	I.
17	11 39 18	2.260	68.60	63 .. 66	I.	17	11 29.29	1.922	63.41	95 .. 98	I.
18	12 32.12	2.154	67.01	71 .. 74	I.	18	12 15.29	1.920	63.37	104 .. 107	I.
19	13 22.57	2.060	65.59	81 .. 84	II.	19	13 1.45	1.930	63.55	108 .. 111	II.
20	14 11.02	1.989	64.51	85 .. 88	II.	20	13 47.95	1.946	63.90	111 .. 114	II.
21	14 58.04	1.941	63.81	95 .. 98	II.	21	14 34.86	1.961	64.19	121 .. 124	II.
22	15 44.18	1.914	63.46	102 .. 105	II.	22	15 22.08	1.971	64.42	126 .. 129	II.
23	16 29.91	1.906	63.43	108 .. 111	II.	23	16 9.46	1.973	64.52	133 .. 136	II.
24	17 15.71	1.917	63.66	111 .. 114	II.	24	16 56.79	1.968	64.49	138 .. 141	II.
25	18 1.95	1.939	64.02	120 .. 123	II.	25	17 43.93	1.960	64.39	145 .. 148	II.
26	18 48.77	1.962	64.40	126 .. 129	II.	26	18 30.89	1.956	64.30	151 .. 154	II.
27	19 36.14	1.984	64.71	130 .. 133	II.	27	19 17.82	1.962	64.35	156 .. 159	II.
28	20 24.00	2.001	64.94	137 .. 140	II.	28	20 5.08	1.986	64.64	161 .. 164	II.
29	21 12.20	2.011	64.98		II.	29	20 53.13	2.029	65.25		II.
30	22 0.54	2.015	64.97		II.	30	21 42.52	2.098	66.24		II.
31	22 48.92	2.017	64.92		II.	31	22 33.85	2.191	67.61		II.

WASHINGTON MERIDIAN.

Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	22 33.85	2.191	67.61		II.	July 2	0 52.57	2.575	73.24		I.
2	23 27.69	2.301	69.25		II.	3	1 53.05	2.457	71.65		I.
4	0 24.29	2.414	70.89		I.	4	2 50.27	2.309	69.54		I.
5	1 23.38	2.503	72.18		I.	5	3 43.90	2.165	67.46	72.. 75	I.
6	2 24.05	2.541	72.77		I.	6	4 34.40	2.048	65.71	82.. 85	I.
7	3 24.86	2.514	72.46	36.. 39	I.	7	5 22.43	1.961	64.42	85.. 88	I.
8	4 24.28	2.428	71.30	44.. 47	I.	8	6 8.84	1.911	63.63	95.. 98	I.
9	5 21.15	2.398	69.59	55.. 58	I.	9	6 54.42	1.892	63.30	103..106	I.
10	6 14.99	2.180	67.71	63.. 66	I.	10	7 39.84	1.896	63.34	108..111	I.
11	7 5.89	2.067	65.97	70.. 73	I.	11	8 25.57	1.916	63.61	111..114	I.
12	7 54.38	1.979	64.58	80.. 83	I.	12	9 11.88	1.943	63.96	120..123	I.
13	8 41.13	1.922	63.64	84.. 87	I.	13	9 58.83	1.967	64.27	126..129	I.
14	9 26.86	1.894	63.14	93.. 96	I.	14	10 46.22	1.980	64.43	130..133	I.
15	10 12.22	1.890	63.02	102..105	I.	15	11 33.74	1.978	64.36	138..141	I.
16	10 57.72	1.904	63.20	106..109	I.	16	12 21.04	1.961	64.10	145..148	II.
17	11 43.70	1.928	63.57	110..113	I.	17	13 7.81	1.936	63.72	151..154	II.
18	12 30.28	1.953	63.97	116..119	II.	18	13 53.96	1.911	63.37	156..159	II.
19	13 17.39	1.971	64.28	124..127	II.	19	14 39.60	1.895	63.18	162..165	II.
20	14 4.81	1.978	64.43	129..132	II.	20	15 25.07	1.899	63.30	167..170	II.
21	14 52.22	1.970	64.38	136..139	II.	21	16 10.93	1.928	63.80	173.. 2	II.
22	15 39.30	1.953	64.18	143..146	II.	22	16 57.86	1.988	64.78	4.. 7	II.
23	16 25.96	1.934	63.93	149..152	II.	23	17 46.61	2.081	66.23	9.. 12	II.
24	17 12.19	1.920	63.76	153..156	II.	24	18 37.97	2.203	68.06	13.. 16	II.
25	17 58.26	1.922	63.80	157..160	II.	25	19 32.48	2.341	70.06	20.. 23	II.
26	18 44.63	1.947	64.17	165..168	II.	26	20 30.25	2.470	71.87	27.. 30	II.
27	19 31.93	2.000	64.97	172.. 1	II.	27	21 30.71	2.558	73.05		II.
28	20 20.89	2.086	66.25	3.. 6	II.	28	22 32.51	2.578	73.27		II.
29	21 12.31	2.204	67.96		II.	29	23 33.91	2.526	72.51		II.
30	22 6.82	2.342	69.94		II.	31	0 33.33	2.417	71.01		I.
31	23 4.68	2.478	71.85		II.	Aug. 1	1 29.82	2.288	69.13		I.
June 2	0 5.48	2.575	73.27		I.	2	2 23.18	2.163	67.31		I.
3	1 7.96	2.613	73.77		I.	3	3 13.78	2.059	65.80	83.. 86	I.
4	2 10.30	2.563	73.15		I.	4	4 2.24	1.985	64.72	93.. 96	I.
5	3 10.67	2.453	71.62	51.. 54	I.	5	4 49.30	1.942	64.08	102..105	I.
6	4 7.78	2.307	69.57	60.. 63	I.	6	5 35.64	1.924	63.82	106..109	I.
7	5 1.39	2.164	67.48	68.. 71	I.	7	6 21.81	1.926	63.85	110..113	I.
8	5 51.81	2.044	65.66	77.. 80	I.	8	7 8.20	1.941	64.06	116..119	I.
9	6 39.71	1.957	64.29	83.. 86	I.	9	7 55.02	1.960	64.31	124..127	I.
10	7 25.89	1.900	63.41	90.. 93	I.	10	8 42.25	1.974	64.48	129..132	I.
11	8 11.18	1.879	63.02	98..101	I.	11	9 29.72	1.979	64.50	136..139	I.
12	8 56.27	1.882	63.01	106..109	I.	12	10 17.18	1.974	64.34	143..146	I.
13	9 41.67	1.903	63.28	109..112	I.	13	11 4.39	1.958	64.05	149..152	I.
14	10 27.67	1.932	63.60	114..117	I.	14	11 51.15	1.938	63.72	153..156	I.
15	11 14.38	1.959	64.09	122..125	I.	15	12 37.45	1.922	63.47	158..161	II.
16	12 1.63	1.976	64.35	128..131	II.	16	13 23.48	1.917	63.42	165..168	II.
17	12 49.12	1.978	64.40	134..137	II.	17	14 9.61	1.931	63.68	172.. 1	II.
18	13 36.47	1.965	64.22	141..144	II.	18	14 56.35	1.968	64.33	3.. 7	II.
19	14 23.37	1.941	63.89	147..150	II.	19	15 44.31	2.033	65.39	8.. 11	II.
20	15 9.63	1.915	63.55	153..156	II.	20	16 34.15	2.124	66.82	11.. 14	II.
21	15 55.36	1.898	63.33	156..159	II.	21	17 26.40	2.233	68.47	18.. 21	II.
22	16 40.86	1.898	63.38	163..166	II.	22	18 21.34	2.345	70.13	25.. 28	II.
23	17 26.66	1.923	63.81	169..172	II.	23	19 18.80	2.438	71.44	31.. 34	II.
24	18 13.44	1.981	64.71	2.. 5	II.	24	20 18.03	2.489	72.11	37.. 40	II.
25	19 2.04	2.074	66.12	5.. 8	II.	25	21 17.83	2.484	71.98		II.
26	19 53.26	2.201	68.00	10.. 13	II.	26	22 16.86	2.426	71.10		II.
27	20 47.82	2.348	70.12	17.. 20	II.	27	23 14.01	2.333	69.71		II.
28	21 45.93	2.491	72.12		II.	29	0 8.76	2.230	68.18		I.
29	22 47.07	2.595	73.54		II.	30	1 1.10	2.134	66.78		I.
30	23 49.95	2.628	73.97		II.	31	1 51.35	2.058	65.67		I.
32	0 52.57	2.575	73.24		I.	32	2 40.05	2.005	64.91		I.

WASHINGTON MERIDIAN.

Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Sept. 1	2 40.05	2.005	64.91		I.	Nov. 1	3 57.05	1.981	64.68	134 .. 137	I.
2	3 27.75	1.974	64.50	105 .. 108	I.	2	4 44.31	1.956	64.33	141 .. 144	I.
3	4 14.94	1.965	64.36	109 .. 112	I.	3	5 30.92	1.928	63.94	148 .. 151	I.
4	5 2.00	1.962	64.40	113 .. 116	I.	4	6 16.92	1.907	63.61	153 .. 156	I.
5	5 49.15	1.968	64.52	122 .. 125	I.	5	7 2.56	1.899	63.46	156 .. 159	I.
6	6 36.46	1.974	64.61	128 .. 131	I.	6	7 48.24	1.911	63.60	164 .. 167	I.
7	7 23.89	1.977	64.61	134 .. 137	I.	7	8 34.50	1.949	64.13	170 .. 173	I.
8	8 11.31	1.973	64.49	141 .. 144	I.	8	9 22.01	2.015	65.10	2 .. 5	I.
9	8 58.56	1.963	64.27	147 .. 150	I.	9	10 11.45	2.109	66.48	7 .. 10	I.
10	9 45.53	1.951	64.01	153 .. 156	I.	10	11 3.42	2.225	68.17	11 .. 14	I.
11	10 32.23	1.942	63.81	156 .. 159	I.	11	11 58.28	2.347	69.97	17 .. 20	II.
12	11 18.81	1.942	63.77	163 .. 166	I.	12	12 55.97	2.454	71.53	25 .. 28	II.
13	12 5.55	1.956	63.99	169 .. 172	II.	13	13 55.75	2.517	72.45	31 .. 34	II.
14	12 52.86	1.990	64.53	2 .. 5	II.	14	14 56.30	2.516	72.53	37 .. 40	II.
15	13 41.23	2.045	65.42	5 .. 8	II.	15	15 56.06	2.453	71.70	45 .. 48	II.
16	14 31.17	2.129	66.62	10 .. 13	II.	16	16 53.74	2.348	70.22	57 .. 60	II.
17	15 23.10	2.209	68.02	17 .. 20	II.	17	17 48 65	2.229	68.49	65 .. 68	II.
18	16 17.22	2.300	69.41	22 .. 25	II.	18	18 40.78	2.120	66.84	71 .. 74	II.
19	17 13.37	2.375	70.54	29 .. 32	II.	19	19 30.57	2.037	65.51	81 .. 84	II.
20	18 10.97	2.418	71.16	35 .. 38	II.	20	20 18.67	1.978	64.60	85 .. 88	II.
21	19 9.08	2.417	71.12	41 .. 44	II.	21	21 5.79	1.953	64.13		II.
22	20 6 69	2.374	70.46	51 .. 54	II.	22	21 52.58	1.950	64.04		II.
23	21 2.81	2.303	69.35		II.	23	22 39.54	1.965	64.21		II.
24	21 57.08	2.220	68.08		II.	24	23 26.94	1.985	64.51		II.
25	22 49.38	2.141	66.87		II.	26	0 14.82	2.003	64.78		I.
26	23 39.97	2.078	65.89		II.	27	1 2.99	2.008	64.90		I.
28	0 29.26	2.033	65.21		I.	28	1 51.09	1.997	64.79		I.
29	1 17.70	2.007	64.84		I.	29	2 38.74	1.969	64.44		I.
30	2 5.68	1.994	64.70		I.	30	3 25.62	1.935	63.95	145 .. 148	I.
Oct. 1	2 53.49	1.991	64.71		I.	Dec. 1	4 11.61	1.898	63.43	151 .. 154	I
2	3 41.26	1.990	64.78	120 .. 123	I.	2	4 56.79	1.870	63.03	156 .. 159	I.
3	4 29.02	1.989	64.81	126 .. 129	I.	3	5 41.51	1.861	62.89	162 .. 165	I.
4	5 16.71	1.983	64.75	130 .. 133	I.	4	6 26.30	1.878	63.15	167 .. 170	I.
5	6 4.17	1.971	64.58	137 .. 140	I.	5	7 11.85	1.924	63.88	173 .. 2	I.
6	6 51.29	1.955	64.32	144 .. 147	I.	6	7 58.94	2.006	65.11	4 .. 7	I.
7	7 38.04	1.941	64.04	150 .. 153	I.	7	8 48.41	2.125	66.84	9 .. 12	I.
8	8 24.50	1.932	63.84	155 .. 158	I.	8	9 41.06	2.267	68.91	13 .. 16	I.
9	9 10.89	1.936	63.83	161 .. 164	I.	9	10 37.26	2.416	71.05	20 .. 23	I.
10	9 57.55	1.955	64.08	167 .. 170	I.	10	11 36.86	2.543	72.82	27 .. 30	I.
11	10 44.91	1.996	64.66	173 .. 2	I.	11	12 38.84	2.608	73.74	34 .. 37	II.
12	11 33.51	2.059	65.69	4 .. 7	I.	12	13 41.41	2.591	73.55	39 .. 40	II.
13	12 23.86	2.140	66.85	9 .. 12	II.	13	14 42.64	2.501	72.32	51 .. 54	II.
14	13 16.35	2.236	68.29	13 .. 16	II.	14	15 41.09	2.366	70.45	61 .. 64	II.
15	14 11.16	2.329	69.72	20 .. 23	II.	15	16 36.13	2.224	68.43	68 .. 71	II.
16	15 7.98	2.401	70.83	27 .. 30	II.	16	17 27.97	2.101	66.62	79 .. 82	II.
17	16 6 11	2.435	71.39	33 .. 36	II.	17	18 17.21	2.010	65.22	84 .. 87	II.
18	17 4.50	2.422	71.23	38 .. 41	II.	18	19 4.71	1.955	64.34	93 .. 96	II.
19	18 2.02	2.365	70.43	47 .. 50	II.	19	19 51.28	1.931	63.92	102. 105	II.
20	18 57.80	2.281	69.19	59 .. 63	II.	20	20 37.59	1.932	63.90	106 .. 109	II.
21	19 51.45	2.191	67.81	67 .. 70	II.	21	21 24.17	1.951	64.11	110 .. 113	II.
22	20 43.02	2.110	66.53	74 .. 77	II.	22	22 11.29	1.975	64.42		II.
23	21 32.86	2.048	65.53		II.	23	22 58.93	1.993	64.66		II.
24	22 21.50	2.009	64.87		II.	24	23 46.86	1.998	64.72		II.
25	23 9.45	1.990	64.56		II.	26	0 34.69	1.984	64.51		II.
26	23 57.17	1.989	64.52		I.	27	1 21.98	1.953	64.06		I.
28	0 44.99	1.996	64.66		I.	28	2 8.39	1.913	63.48		I.
29	1 33.00	2.004	64.84		I.	29	2 53.83	1.874	62.92		I.
30	2 21.15	2.007	64.95		I.	30	3 38.43	1.845	62.52	158 .. 161	I.
31	3 9.26	1.999	64.90	128 .. 131	I.	31	4 22.49	1.832	62.42	165 .. 168	I.
32	3 57.05	1.981	64.68	134 .. 137	I.	32	5 6.48	1.839	62.74	171 .. 174	I.

MEAN PLACES FOR 1867.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
1	*d* Piscium	6.5	0 13 45.35	+3.086	+ 7 27 5.8	+20.07
2	44 Piscium	6	0 18 35.18	3.075	+ 1 12 11.6	19.99
3	10 Ceti	6	0 19 48.14	3.077	— 0 47 11.9	19.98
4	δ Piscium	4.5	0 41 47.02	3.108	+ 6 51 39.0	19.72
5	ε PISCIUM	4	0 56 2.61	3.109	7 10 24.0	19.46
6	ζ^1 Piscium	5.4	1 6 47.04	+3.130	+ 6 52 16.8	+19.15
7	μ Piscium	5	1 23 13.07	3.138	5 27 22.6	18.57
8	η PISCIUM	4.3	1 24 22.13	3.199	14 39 32.9	18.71
9	ν Piscium	5.4	1 34 30.69	3.118	4 48 46.9	18.35
10	ο PISCIUM	4	1 38 22.43	3.161	8 29 13.8	18.25
11	ξ^1 CETI	4.5	2 5 57.16	+3.169	+ 8 13 17.2	+17.06
12	ξ^2 Ceti	4	2 21 5.44	3.184	7 51 44.8	16.38
13	μ Ceti	4	2 37 45.33	3.234	9 33 2.4	15.44
14	π Arietis	6.5	2 41 52.45	3.337	16 54 35.2	15.30
15	ε Arietis	4.5	2 51 36.72	3.421	20 48 23.4	14.69
16	λ Ceti	6.5	2 52 35.66	+3.215	+ 8 22 34.2	+14.65
17	δ Arietis	4.5	3 4 1.69	3.421	19 13 17.7	13.94
18	ζ ARIETIS	4.5	3 7 15.65	3.436	20 32 58.5	13.65
19	*f* Tauri	4	3 23 32.10	3.306	12 28 42.2	12.66
20	η TAURI	3	3 39 34.93	3.553	23 41 28.9	11.47
21	*e* Tauri	5	3 40 58.75	+3.281	+10 43 53.4	+11.38
22	λ Tauri	3.4	3 53 18.85	3.317	12 6 44.0	10.54
23	A^1 Tauri	5.4	3 56 50.12	3.536	21 42 56.7	10.21
24	γ TAURI	4	4 12 13.61	3.407	15 18 13.7	9.06
25	υ^1 Tauri	5.4	4 18 21.14	3.581	22 30 33.7	8.58
26	ε TAURI	4.3	4 20 51.17	+3.495	+18 52 57.3	+ 8.38
27	α TAURI	1	4 28 17.48	3.435	16 14 22.0	7.65
28	τ Tauri	4.5	4 34 15.92	3.594	22 41 57.0	7.33
29	ι Tauri	5	4 55 8.91	3.582	21 23 49.4	5.57
30	11 ORIONIS	5	4 56 58.30	3.425	15 12 58.1	5.42
31	ο Tauri	6	5 19 38.85	+3.603	+21 49 13.6	+ 3.54
32	119 Tauri	6.5	5 24 25.09	3.517	18 29 32.5	3.12
33	ζ Tauri	3.4	5 29 41.91	3.586	21 3 30.9	2.62
34	χ^1 Orionis	5.4	5 46 30.41	3.552	20 14 54.6	+ 1.08
35	ν Orionis	5.4	5 59 58.77	3.428	14 46 52.9	— 0.02
36	η Geminorum	3.4	6 6 50.97	+3.624	+22 32 32.2	— 0.61
37	μ GEMINORUM	3	6 14 54.86	3.633	22 34 42.8	1.44
38	γ GEMINORUM	2.3	6 30 1.71	3.469	16 30 35.6	2.66
39	ξ Geminorum	4.3	6 37 49.58	3.373	13 2 9.8	3.46
40	ζ Geminorum	4	6 56 13.20	3.566	20 45 45.5	4.88
41	λ Geminorum	4.3	7 10 27.00	+3.457	+16 46 39.8	— 6.07
42	δ GEMINORUM	3.4	7 12 10.71	3.591	22 13 27.3	6.23
43	63 Geminorum	6.5	7 19 50.66	3.570	21 42 53.3	6.92
44	6 Canis Minoris	6.5	7 22 23.71	+3.347	+12 16 46.6	— 7.06

MEAN PLACES FOR 1867.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
45	68 Geminorum .	6.5	7 26 1.00	+3.432	+16 6 37.5	— 7.31
46	*f* Geminorum .	6	7 31 47.72	3.475	17 58 28.4	7.81
47	1 Cancri . . .	6	7 49 26.36	3.418	16 8 35.1	9.21
48	5 Cancri . . .	6	7 53 55.36	3.428	16 49 10.7	9.52
49	8 Cancri . . .	6	7 57 39.92	3.351	13 29 41.5	9.90
50	μ^2 Cancri . . .	5	7 59 56.14	+3.543	+21 58 2.0	—10.04
51	12 Cancri . . .	6	8 1 16.37	3.361	14 1 31.6	10.17
52	ζ^1 Cancri . . .	5.4	8 4 34.97	3.453	18 2 47.4	10.48
53	d^1 Cancri . . .	6	8 15 41.77	3.448	18 45 25.2	11.20
54	29 Cancri . . .	6	8 21 12.01	3.358	14 38 54.6	11.66
55	θ Cancri . . .	6	8 24 0.61	+3.433	+18 32 30.5	—11.84
56	c^1 Cancri . . .	6	8 29 52.80	3.257	10 7 0.2	12.20
57	39 Cancri . . .	6	8 32 27.10	3.461	20 28 29.8	12.40
58	δ Cancri . . .	4	8 37 7.46	3.423	18 38 27.7	12.93
59	A^2 Cancri . . .	6	8 39 38.47	3.296	12 35 45.0	12.92
60	α Cancri . . .	4	8 51 12.68	+3.291	+12 22 14.5	—13.66
61	κ CANCRI . .	5	9 0 32.47	3.256	11 12 5.2	14.22
62	π^2 Cancri . . .	6	9 7 53.14	3.323	15 29 30.8	14.64
63	ω Leonis . . .	6	9 21 20.08	3.221	9 38 1.8	15.48
64	*h* Leonis . . .	6	9 24 49.73	3.226	10 18 1.4	15.68
65	10 Leonis . . .	5.6	9 30 11.39	+3.174	+ 7 25 52.4	—15.90
66	ο Leonis . . .	4.3	9 34 3.32	3.226	10 29 44.7	16.18
67	B. A. C. 3336	5.6	9 39 9.07	3.169	7 19 18.0	16.38
68	π Leonis . . .	5	9 53 11.09	3.180	8 40 51.4	17.09
69	α LEONIS . .	1.2	10 1 17.22	3.204	12 36 58.0	17.41
70	43 Leonis . . .	6	10 16 2.90	+3.145	+ 7 13 0.9	—18.12
71	45 Leonis . . .	6	10 20 37.34	3.177	10 26 20.3	18.21
72	ρ LEONIS . .	4	10 25 48.42	3.167	9 59 23.4	18.41
73	34 Sextantis . .	6	10 35 45.34	3.104	4 16 36.6	18.73
74	*l* LEONIS . .	5	10 42 15.81	3.160	11 14 52.9	18.93
75	55 Leonis . . .	6	10 48 52.00	+3.092	+ 1 26 45.6	—19.09
76	*d* Leonis . . .	5	10 53 41.47	3.103	4 19 50.5	19.27
77	*c* Leonis . . .	5	10 53 51.16	3.118	6 48 54.5	19.26
78	χ Leonis . . .	5	10 58 9.35	3.102	8 3 14.3	19.41
79	p^5 Leonis . . .	5	11 6 57.48	3.085	0 39 12.6	19.57
80	φ Leonis . . .	5.4	11 9 54.02	+3.053	— 2 55 30.9	—19.63
81	σ Leonis . . .	4	11 14 16.65	3.098	+ 6 45 27.4	19.68
82	79 Leonis . . .	6	11 17 12.86	3.084	+ 2 8 13.7	19.73
83	υ LEONIS . .	5.4	11 30 8.39	3.072	— 0 5 23.0	19.85
84	β Virginis . .	3.4	11 43 46.07	3.128	+ 2 30 50.1	20.29
85	10 Virginis . .	6	12 2 52.37	+3.074	+ 2 38 39.7	—20.28
86	η VIRGINIS . .	3.4	12 13 6.14	3.068	+ 0 4 21.2	20.05
87	*q* Virginis . .	6	12 26 55.03	3.092	— 8 43 4.5	19.89
88	*f* Virginis . .	6	12 29 56.51	+3.086	— 5 5 59.6	—19.97

MEAN PLACES FOR 1867.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
89	χ Virginis . .	5	12 32 23.35	+3.095	− 7 15 45.8	−19.90
90	γ Virginis . .	3.2	12 34 55.38	3.040	0 43 11.2	19.84
91	23 Virginis . .	6	12 35 5.28	3.100	6 46 3.1	19.84
92	38 Virginis . .	6	12 46 22.71	3.073	2 49 47.4	19.68
93	ψ Virginis . .	5	12 47 26.39	3.117	8 48 57.5	19.64
94	*k* Virginis . .	6	12 52 48.66	+3.089	− 3 5 33.4	−19.49
95	48 Virginis . .	6	12 57 3.28	3.086	2 56 46.4	19.46
96	θ VIRGINIS . .	4.5	13 3 3.98	3.100	4 49 41.6	19.34
97	α VIRGINIS . .	1	13 18 11.38	3.152	10 27 57.9	18.93
98	l^2 Virginis . .	5	13 25 3.28	3.117	5 34 5.5	18.74
99	*h* Virginis . .	5	13 25 57.96	+3.153	− 9 28 43.6	−18.70
100	*m* Virginis . .	6	13 34 38.04	3.142	8 1 52.2	18.36
101	83 Virginis . .	6	13 37 19.59	3.227	15 30 36.3	18.31
102	86 Virginis . .	6	13 38 51.31	3.188	11 45 32.3	18.22
103	89 Virginis . .	5	13 42 38.96	3.248	17 28 14.1	18.13
104	94 Virginis . .	6	13 59 15.42	+3.169	− 8 15 20.1	−17.38
105	κ Virginis . .	4.5	14 5 48.34	3.197	9 39 15.1	17.10
106	λ Virginis . .	5.4	14 11 55.06	3.239	12 45 26.9	16.80
107	2 Libræ . . .	6	14 16 16.35	3.219	11 6 19.3	16.71
108	5 Libræ . . .	6	14 38 37.98	3.299	11 53 51.3	15.47
109	α^2 LIBRÆ . .	2.3	14 43 31.48	+3.306	−15 29 13.1	−15.22
110	ι^1 Libræ . . .	5.4	15 4 38.75	3.410	19 17 10.0	13.91
111	ζ^1 Libræ . . .	4	15 20 45.65	3.376	16 15 2.3	12.88
112	γ Libræ . . .	4.5	15 28 5.35	3.346	14 20 36.8	12.33
113	θ Libræ . . .	5.4	15 46 15.46	3.412	16 20 11.5	10.92
114	δ SCORPII . .	2.3	15 52 28.38	+3.535	−22 14 25.7	−10.60
115	β^1 SCORPII . .	2	15 57 42.36	3.476	19 26 19.6	10.22
116	ν^2 Scorpii . .	4	16 4 16.18	3.480	19 6 43.8	9.68
117	σ Scorpii . .	3.4	16 13 6.51	3.636	25 16 14.0	9.02
118	ψ Ophiuchi . .	5	16 16 [illegible].39	3.503	19 43 24.1	8.82
119	χ Ophiuchi . .	6	16 19 19.13	+3.470	−18 9 5.8	− 8.52
120	α SCORPII . .	1.2	16 21 15.41	3.668	26 8 1.3	8.40
121	ω Ophiuchi . .	5	16 24 15.40	3.548	21 10 45.9	8.06
122	B. A. C. 5579	5	16 33 53.02	3.462	17 28 54.1	7.33
123	20 Ophiuchi . .	5	16 42 28.70	3.313	10 32 41.6	6.73
124	29 Ophiuchi . .	6	16 54 4.52	+3.503	−18 41 9.2	− 5.68
125	η Ophiuchi . .	2.3	17 2 45.15	3.436	15 33 25.4	4.84
126	ν Serpentis . .	5.4	17 13 20.86	3.372	12 42 30.9	4.03
127	θ Ophiuchi . .	3.4	17 13 50.64	3.681	24 51 49.2	4.06
128	ξ Serpentis . .	4.3	17 29 58.31	3.434	15 18 42.0	2.67
129	ο Serpentis . .	5.4	17 33 56.44	+3.369	−12 48 4.3	− 2.30
130	4 Sagittarii . .	5	17 51 40.35	3.661	23 48 1.7	− 0.74
131	μ^1 SAGITTARII .	4	18 5 48.58	+3.586	−21 5 26.3	+ 0.50

MEAN PLACES FOR 1867.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
132	21 Sagittarii . .	5	18 17 25.69	+3.574	—20 36 35.2	+ 1.51
133	λ Sagittarii . .	3	18 19 45.77	3.707	25 29 32.6	1.50
134	B. A. C. 6279	5.4	18 21 37.08	3.419	14 38 52.8	1.87
135	24 Sagittarii . .	6	18 25 46.09	3.667	24 7 39.5	2.25
136	ν^1 Sagittarii . .	5	18 46 8.29	3.626	22 54 18.4	4.02
137	ξ^2 Sagittarii . .	4	18 49 47.55	+3.582	—21 16 42.2	+ 4.33
138	ο Sagittarii . .	4	18 56 42.63	3.599	21 55 58.6	4.88
139	π Sagittarii . .	3	19 1 51.09	3.574	21 13 54.3	5.35
140	*d* SAGITTARII .	5	19 9 51.15	3.515	19 11 13.1	6.03
141	ρ^1 Sagittarii . .	4	19 13 57.48	3.488	18 5 40.2	6.42
142	υ Sagittarii . .	5.4	19 14 6.58	+3.445	—16 12 8.1	+ 6.33
143	e^2 Sagittarii . .	5	19 34 54.57	3.438	16 25 56.6	8.11
144	*f* Sagittarii . .	5	19 38 36.11	3.506	20 4 39.7	8.34
145	*g* Sagittarii . .	6.5	19 50 24.38	3.409	15 50 30.7	9.24
146	63 Sagittarii . .	6	19 54 31.46	3.366	14 0 7.0	9.68
147	ξ^2 Capricorni .	6	20 5 1.26	+3.350	—13 0 12.0	+10.25
148	α^2 CAPRICORNI	3.4	20 10 40.37	3.334	12 57 16.8	10.83
149	ρ Capricorni .	5	20 21 16.23	3.431	18 15 2.5	11.62
150	τ^2 Capricorni .	5	20 31 49.94	3.363	15 25 9.9	12.30
151	ε Aquarii . .	4.3	20 40 28.54	3.257	9 58 49.8	12.90
152	μ AQUARII . .	5.4	20 45 28.65	+3.241	— 9 28 49.1	+13.21
153	θ Capricorni .	4	20 58 28.10	3.385	17 45 31.5	14.06
154	ν Aquarii . .	4.5	21 2 20.71	3.274	11 54 29.6	14.34
155	β AQUARII . .	3	21 24 33.34	3.164	6 9 16.9	15.62
156	ξ AQUARII . .	5.4	21 30 40.17	3.199	8 26 56.9	15.91
157	λ Capricorni .	5.6	21 39 22.40	+3.238	—11 58 39.8	+16.41
158	θ AQUARII . .	4.5	22 9 48.83	3.171	8 26 39.8	17.75
159	ρ Aquarii . .	5.6	22 13 11.96	3.163	8 29 14.5	17.96
160	γ Aquarii . .	4.3	22 14 47.20	3.105	2 3 22.4	18.02
161	ζ Aquarii . .	3.4	22 21 58.98	3.091	0 41 57.2	18.30
162	σ Aquarii . .	5.4	22 23 36.32	+3.182	—11 21 24.9	+18.39
163	η AQUARII . .	4.3	22 28 31.27	3.084	0 48 7.5	18.42
164	κ Aquarii . .	5	22 30 52.01	3.113	4 54 46.9	18.47
165	78 Aquarii . .	6	22 47 38.66	3.129	— 7 54 33.8	19.08
166	β Piscium . .	5.4	22 57 6.64	3.057	+ 3 6 16.4	19.30
167	φ Aquarii . .	4.5	23 7 26.07	+3.113	— 6 45 55.2	+19.37
168	γ Piscium . .	4	23 10 16.22	3.110	+ 2 33 22.4	19.63
169	κ Piscium . .	5.4	23 20 6.95	3.079	0 31 40.2	19.65
170	ι PISCIUM . .	4.5	23 33 6.65	3.084	4 54 20.1	19.47
171	19 Piscium . .	6	23 39 36.01	3.067	2 45 0.2	20.00
172	26 Piscium . .	6	23 48 19.72	+3.068	+ 6 19 56.4	+20.05
173	ω PISCIUM . .	4	23 52 28.97	3.078	6 7 36.8	19.91
174	c^2 Piscium . .	6	23 55 42.06	+3.066	+ 7 44 49.6	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	14 45.6	54 3.3	—0.35	14 52.0	54 27.1	+0.72	14 55.8	54 41.0	+0.95
1.5	14 44.7	54 0.1	0.19	14 54.6	54 36.5	0.84	14 59.2	54 53.3	1.10
2.0	14 44.3	53 58.8	—0.03	14 57.5	54 47.3	0.94	15 3.0	55 7.3	1.23
2.5	14 44.4	53 59.3	+0.11	15 0.8	54 59.2	1.03	15 7.3	55 22.9	1.35
3.0	14 45.1	54 1.4	0.24	15 4.3	55 12.1	1.10	15 11.8	55 39.7	1.44
3.5	14 46.1	54 5.1	0.36	15 8.0	55 25.7	1.16	15 16.6	55 57.4	1.50
4.0	14 47.5	54 10.2	0.47	15 11.9	55 39.9	1.19	15 21.6	56 15.8	1.54
4.5	14 49.2	54 16.4	0.57	15 15.8	55 54.3	1.22	15 26.7	56 34.4	1.55
5.0	14 51.2	54 23.9	0.67	15 19.8	56 9.1	1.23	15 31.8	56 53.0	1.53
5.5	14 53.4	54 32.4	0.75	15 23.8	56 23.9	1.23	15 36.7	57 11.2	1.49
6.0	14 56.0	54 41.9	0.83	15 27.8	56 38.6	1.23	15 41.5	57 28.7	1.42
6.5	14 58.9	54 52.4	0.90	15 31.8	56 53.4	1.22	15 46.0	57 45.3	1.33
7.0	15 2.0	55 3.6	0.97	15 35.8	57 7.9	1.21	15 50.2	58 0.7	1.22
7.5	15 5.3	55 15.7	1.05	15 39.7	57 22.3	1.19	15 54.1	58 14.8	1.12
8.0	15 8.9	55 28.9	1.13	15 43.6	57 36.4	1.17	15 57.5	58 27.5	1.00
8.5	15 12.7	55 42.9	1.20	15 47.4	57 50.3	1.14	16 0.5	58 38.7	0.86
9.0	15 16.7	55 57.7	1.27	15 51.0	58 3.8	1.12	16 3.1	58 48.2	0.73
9.5	15 21.0	56 13.5	1.35	15 54.6	58 17.1	1.09	16 5.4	58 56.2	0.61
10.0	15 25.5	56 30.1	1.42	15 58.2	58 30.1	1.06	16 7.1	59 2.8	0.49
10.5	15 30.3	56 47.6	1.49	16 1.6	58 42.6	1.02	16 8.4	59 7.9	0.36
11.0	15 35.3	57 5.9	1.56	16 4.9	58 54.6	0.97	16 9.4	59 11.5	0.25
11.5	15 40.4	57 25.1	1.62	16 8.0	59 5.8	0.90	16 10.1	59 13.9	0.14
12.0	15 45.8	57 44.9	1.67	16 10.8	59 16.2	0.82	16 10.4	59 15.0	+0.04
12.5	15 51.4	58 5.2	1.70	16 13.3	59 25.5	0.72	16 10.4	59 15.0	—0.05
13.0	15 57.0	58 25.8	1.72	16 15.5	59 33.4	0.59	16 10.1	59 13.8	0.14
13.5	16 2.6	58 46.5	1.71	16 17.2	59 39.7	0.45	16 9.5	59 11.5	0.24
14.0	16 8.2	59 6.8	1.67	16 18.4	59 44.2	0.29	16 8.6	59 8.1	0.33
14.5	16 13.6	59 26.5	1.59	16 19.0	59 46.6	+0.10	16 7.3	59 3.5	0.44
15.0	16 18.6	59 44.9	1.46	16 19.0	59 46.5	—0.11	16 5.7	58 57.6	0.54
15.5	16 23.2	60 1.6	1.30	16 18.3	59 43.8	0.34	16 3.7	58 50.5	0.64
16.0	16 27.1	60 16.1	1.09	16 16.8	59 38.3	0.57	16 1.5	58 42.1	0.75
16.5	16 30.2	60 27.9	0.85	16 14.5	59 30.0	0.80	15 58.8	58 32.4	0.87
17.0	16 32.6	60 36.5	0.57	16 11.5	59 19.0	1.03	15 55.8	58 21.3	0.98
17.5	16 34.0	60 41.5	+0.25	16 7.8	59 5.2	1.25	15 52.4	58 8.9	1.09
18.0	16 34.3	60 42.5	—0.08	16 3.4	58 49.0	1.43	15 48.7	57 55.2	1.19
18.5	16 33.5	60 39.5	0.42	15 58.5	58 30.8	1.59	15 44.6	57 40.3	1.28
19.0	16 31.5	60 32.3	0.77	15 53.1	58 10.9	1.71	15 40.3	57 24.4	1.36
19.5	16 28.4	60 21.0	1.10	15 47.2	57 49.7	1.80	15 35.8	57 7.6	1.42
20.0	16 24.3	60 5.9	1.40	15 41.2	57 27.6	1.87	15 31.1	56 50.3	1.46
20.5	16 19.2	59 47.4	1.66	15 35.1	57 4.9	1.89	15 26.2	56 32.6	1.48
21.0	16 13.4	59 26.0	1.88	15 28.9	56 42.2	1.87	15 21.3	56 14.7	1.48
21.5	16 6.9	59 2.3	2.05	15 22.7	56 19.9	1.82	15 16.5	55 57.1	1.45
22.0	16 0.0	58 36.8	2.17	15 16.9	55 58.6	1.73	15 11.8	55 39.9	1.40
22.5	15 52.8	58 10.1	2.24	15 11.4	55 38.4	1.62	15 7.4	55 23.6	1.31
23.0	15 45.3	57 42.9	2.27	15 6.3	55 19.8	1.47	15 3.3	55 8.4	1.21
23.5	15 37.9	57 15.7	2.24	15 1.8	55 3.1	1.30	14 59.6	54 54.6	1.08
24.0	15 30.7	56 49.1	2.17	14 57.9	54 48.6	1.12	14 56.2	54 42.4	0.94
24.5	15 23.8	56 23.6	2.06	14 54.5	54 36.3	0.92	14 53.4	54 32.1	0.77
25.0	15 17.2	55 59.6	1.92	14 51.8	54 26.5	0.71	14 51.1	54 23.9	0.59
25.5	15 11.2	55 37.4	1.75	14 49.9	54 19.3	0.49	14 49.5	54 17.9	0.40
26.0	15 5.7	55 17.5	1.57	14 48.7	54 14.7	0.27	14 48.6	54 14.3	—0.20
26.5	15 0.9	54 59.8	1.37	14 48.1	54 12.7	—0.05	14 48.3	54 13.2	+0.02
27.0	14 56.8	54 44.5	1.17	14 48.3	54 13.4	+0.17	14 48.7	54 14.7	0.23
27.5	14 53.3	54 31.8	0.95	14 49.2	54 16.7	0.38	14 49.8	54 18.7	0.44
28.0	14 50.5	54 21.6	0.74	14 50.8	54 22.5	0.58	14 51.6	54 25.4	0.67
28.5	14 48.5	54 14.1	0.52	14 53.0	54 30.6	0.77	14 54.1	54 34.7	0.88
29.0	14 47.1	54 9.1	0.31	14 55.8	54 41.0	0.95	14 57.3	54 46.5	1.08
29.5	14 46.5	54 6.6	—0.11	14 59.2	54 53.3	1.10	15 1.1	55 0.6	1.27
30.0	14 46.5	54 6.5	+0.08	15 3.0	55 7.3	1.23	15 5.6	55 17.0	1.44
30.5	14 47.0	54 8.6	0.27	15 7.3	55 22.9	1.35	15 10.6	55 35.3	1.60
31.0	14 48.1	54 12.9	0.44	15 11.8	55 39.7	1.44	15 16.1	55 55.4	1.73
31.5	14 49.8	54 19.1	+0.59	15 16.6	55 57.4	+1.50	15 21.9	56 16.9	+1.84

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	15′ 28″.0	56′ 39″.5	+1″.91	15′ 58″.9	58′ 32″.8	+2″.18	16′ 37″.4	60′ 54″.1	+1″.19
1.5	15 34.3	57 2.6	1.93	16 5.8	58 58.6	2.08	16 40.7	61 6.3	0.83
2.0	15 40.7	57 25.8	1.92	16 12.5	59 22.6	1.92	16 42.8	61 13.9	0.43
2.5	15 47.0	57 48.8	1.88	16 18.5	59 44.5	1.71	16 43.5	61 16.6	+0.03
3.0	15 53.0	58 11.0	1.80	16 23.7	60 3.6	1.45	16 43.0	61 14.5	−0.37
3.5	15 58.6	58 31.9	1.67	16 28.0	60 19.4	1.16	16 41.1	61 7.7	0.75
4.0	16 3.8	58 51.1	1.52	16 31.3	60 31.5	0.84	16 38.0	60 56.4	1.10
4.5	16 8.6	59 8.3	1.33	16 33.5	60 39.7	0.51	16 33.9	60 41.1	1.41
5.0	16 12.6	59 23.0	1.11	16 34.6	60 43.7	+0.17	16 28.8	60 22.4	1.67
5.5	16 15.9	59 35.0	0.88	16 34.5	60 43.6	−0.17	16 22.9	60 0.8	1.88
6.0	16 18.4	59 44.1	0.64	16 33.4	60 39.6	0.49	16 16.4	59 37.1	2.04
6.5	16 20.0	59 50.3	0.39	16 31.3	60 31.8	0.78	16 9.6	59 12.0	2.13
7.0	16 20.9	59 53.5	+0.15	16 28.3	60 20.7	1.04	16 2.5	58 45.9	2.18
7.5	16 21.1	59 54.0	−0.07	16 24.5	60 6.8	1.26	15 55.3	58 19.4	2.19
8.0	16 20.5	59 51.9	0.27	16 20.1	59 50.4	1.44	15 48.2	57 53.2	2.16
8.5	16 19.3	59 47.4	0.47	16 15.1	59 32.1	1.57	15 41.2	57 27.7	2.09
9.0	16 17.5	59 40.7	0.63	16 9.7	59 12.4	1.67	15 34.5	57 3.1	2.00
9.5	16 15.1	59 32.2	0.77	16 4.1	58 51.9	1.73	15 28.2	56 39.8	1.88
10.0	16 12.3	59 22.1	0.89	15 58.4	58 30.9	1.75	15 22.2	56 17.9	1.76
10.5	16 9.2	59 10.8	0.98	15 52.7	58 9.8	1.75	15 16.7	55 57.5	1.63
11.0	16 5.9	58 58.5	1.05	15 47.0	57 48.9	1.72	15 11.6	55 38.8	1.49
11.5	16 2.4	58 45.5	1.10	15 41.4	57 28.4	1.68	15 6.9	55 21.7	1.35
12.0	15 58.7	58 31.9	1.14	15 36.0	57 8.6	1.62	15 2.7	55 6.3	1.21
12.5	15 54.9	58 17.9	1.18	15 30.8	56 49.6	1.55	14 59.0	54 52.6	1.07
13.0	15 51.0	58 3.6	1.20	15 25.9	56 31.4	1.48	14 55.7	54 40.5	0.94
13.5	15 47.1	57 49.1	1.22	15 21.2	56 14.1	1.40	14 52.8	54 30.1	0.80
14.0	15 43.1	57 34.4	1.23	15 16.7	55 57.8	1.32	14 50.4	54 21.2	0.68
14.5	15 39.1	57 19.6	1.23	15 12.6	55 42.5	1.24	14 48.4	54 13.8	0.56
15.0	15 35.0	57 4.8	1.24	15 8.7	55 28.2	1.15	14 46.8	54 7.8	0.44
15.5	15 31.0	56 49.9	1.24	15 5.1	55 14.9	1.07	14 45.5	54 3.2	0.32
16.0	15 26.9	56 35.0	1.24	15 1.7	55 2.6	0.99	14 44.7	54 0.0	0.21
16.5	15 22.9	56 20.2	1.23	14 58.6	54 51.3	0.90	14 44.1	53 58.1	−0.10
17.0	15 18.8	56 5.5	1.21	14 55.8	54 41.0	0.82	14 44.0	53 57.5	+0.01
17.5	15 14.9	55 51.1	1.19	14 53.3	54 31.7	0.73	14 44.2	53 58.2	0.12
18.0	15 11.1	55 37.0	1.16	14 51.1	54 23.5	0.64	14 44.7	54 0.3	0.23
18.5	15 7.3	55 23.3	1.12	14 49.1	54 16.4	0.54	14 45.7	54 3.8	0.26
19.0	15 3.8	55 10.2	1.06	14 47.5	54 10.5	0.44	14 47.1	54 8.9	0.49
19.5	15 0.4	54 57.9	0.99	14 46.3	54 5.9	0.33	14 48.9	54 15.6	0.62
20.0	14 57.3	54 46.5	0.90	14 45.4	54 2.7	0.21	14 51.1	54 23.7	0.76
20.5	14 54.6	54 36.2	0.80	14 44.9	54 1.0	−0.07	14 53.8	54 33.7	0.90
21.0	14 52.1	54 27.2	0.69	14 44.9	54 0.9	+0.07	14 57.1	54 45.5	1.06
21.5	14 50.0	54 19.7	0.56	14 45.4	54 2.6	0.22	15 0.8	54 59.1	1.22
22.0	14 48.4	54 13.8	0.41	14 46.4	54 6.3	0.37	15 5.0	55 14.7	1.37
22.5	14 47.3	54 9.8	0.24	14 47.9	54 11.9	0.54	15 9.7	55 32.1	1.52
23.0	14 46.8	54 7.9	−0.07	14 50.0	54 19.6	0.73	15 15.0	55 51.4	1.68
23.5	14 46.9	54 8.1	+0.11	14 52.7	54 29.5	0.92	15 20.7	56 12.5	1.83
24.0	14 47.6	54 10.5	0.30	14 56.0	54 41.7	1.11	15 26.9	56 35.3	1.96
24.5	14 48.9	54 15.4	0.51	14 59.9	54 56.1	1.30	15 33.6	56 59.6	2.09
25.0	14 50.9	54 22.7	0.71	15 4.5	55 12.8	1.49	15 40.6	57 25.3	2.18
25.5	14 53.5	54 32.5	0.92	15 9.7	55 31.8	1.67	15 47.9	57 52.1	2.25
26.0	14 56.8	54 44.8	1.12	15 15.4	55 53.0	1.84	15 55.3	58 19.4	2.28
26.5	15 0.9	54 59.5	1.33	15 21.7	56 16.1	2.00	16 2.8	58 47.0	2.28
27.0	15 5.6	55 16.7	1.53	15 28.5	56 41.1	2.14	16 10.2	59 14.3	2.22
27.5	15 10.8	55 36.2	1.71	15 35.7	57 7.6	2.26	16 17.4	59 40.6	2.12
28.0	15 16.7	55 57.7	1.87	15 43.3	57 35.4	2.33	16 24.1	60 5.2	1.95
28.5	15 23.1	56 21.1	2.01	15 51.1	58 3.9	2.38	16 30.1	60 27.4	1.72
29.0	15 29.9	56 46.0	2.13	15 58.9	58 32.7	2.38	16 35.4	60 46.6	1.44
29.5	15 37.0	57 12.2	2.21	16 6.7	59 1.1	2.32	16 39.6	61 2.1	1.11
30.0	15 44.3	57 39.1	2.25	16 14.1	59 28.5	2.21	16 42.7	61 13.4	0.75
30.5	15 51.7	58 6.2	2.24	16 21.1	59 54.2	2.04	16 44.5	61 20.1	+0.35
31.0	15 58.9	58 32.8	2.18	16 27.4	60 17.5	1.80	16 45.0	61 21.8	−0.05
31.5	16 5.8	58 58.6	+2.08	16 32.9	60 37.6	+1.52	16 44.1	61 18.6	−0.47

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	16 45.0	61 21.8	−0.05	16 21.5	59 55.5	−1.79	15 37.2	57 12.9	−2.06
1.5	16 44.1	61 18.6	0.47	16 15.2	59 32.4	2.00	15 30.5	56 48.3	2.02
2.0	16 41.9	61 10.5	0.87	16 8.3	59 7.2	2.16	15 24.0	56 24.4	1.94
2.5	16 38.4	60 57.7	1.23	16 1.0	58 40.4	2.26	15 17.8	56 1.7	1.83
3.0	16 33.8	60 40.7	1.56	15 53.5	58 12.7	2.31	15 12.0	55 40.6	1.68
3.5	16 28.2	60 20.1	1.84	15 45.9	57 44.8	2.31	15 6.8	55 21.3	1.52
4.0	16 21.7	59 56.4	2.06	15 38.3	57 17.1	2.26	15 2.1	55 4.1	1.34
4.5	16 14.6	59 30.4	2.22	15 31.0	56 50.3	2.17	14 58.1	54 49.2	1.15
5.0	16 7.1	59 2.9	2.32	15 24.1	56 24.8	2.06	14 54.7	54 36.7	0.94
5.5	15 59.4	58 34.5	2.37	15 17.6	56 0.9	1.92	14 51.9	54 26.7	0.72
6.0	15 51.6	58 5.8	2.37	15 11.6	55 38.9	1.74	14 49.9	54 19.3	0.51
6.5	15 43.9	57 37.5	2.33	15 6.2	55 19.0	1.56	14 48.6	54 14.4	0.30
7.0	15 36.4	57 9.9	2.24	15 1.4	55 1.4	1.37	14 48.0	54 12.1	−0.09
7.5	15 29.2	56 43.6	2.13	14 57.2	54 46.2	1.17	14 48.0	54 12.3	+0.11
8.0	15 22.5	56 18.9	1.99	14 53.8	54 33.4	0.97	14 48.7	54 14.9	0.30
8.5	15 16.2	55 55.9	1.83	14 50.9	54 23.0	0.77	14 50.0	54 19.6	0.49
9.0	15 10.5	55 34.9	1.66	14 48.7	54 15.0	0.57	14 51.9	54 26.6	0.66
9.5	15 5.4	55 16.0	1.49	14 47.2	54 9.4	0.37	14 54.3	54 35.5	0.81
10.0	15 0.8	54 59.2	1.31	14 46.3	54 6.0	0.20	14 57.2	54 46.1	0.94
10.5	14 56.8	54 44.6	1.13	14 46.0	54 4.9	−0.02	15 0.5	54 58.2	1.06
11.0	14 53.4	54 32.1	0.95	14 46.2	54 5.7	+0.14	15 4.1	55 11.6	1.16
11.5	14 50.6	54 21.7	0.78	14 47.0	54 8.5	0.30	15 8.1	55 26.0	1.23
12.0	14 48.3	54 13.4	0.61	14 48.2	54 13.0	0.43	15 12.2	55 41.3	1.29
12.5	14 46.6	54 7.1	0.45	14 49.9	54 19.1	0.56	15 16.5	55 57.0	1.32
13.0	14 45.4	54 2.6	0.30	14 51.9	54 26.5	0.67	15 20.9	56 13.1	1.34
13.5	14 44.6	53 59.9	0.16	14 54.3	54 35.3	0.77	15 25.3	56 29.2	1.34
14.0	14 44.4	53 58.9	−0.03	14 56.9	54 45.1	0.85	15 29.6	56 45.2	1.32
14.5	14 44.5	53 59.4	+0.10	14 59.9	54 55.9	0.93	15 33.9	57 1.0	1.29
15.0	14 45.0	54 1.4	0.22	15 3.1	55 7.6	1.00	15 38.1	57 16.2	1.25
15.5	14 45.9	54 4.7	0.33	15 6.4	55 20.0	1.06	15 42.1	57 30.9	1.19
16.0	14 47.2	54 9.3	0.43	15 10.0	55 33.2	1.11	15 45.9	57 44.9	1.14
16.5	14 48.8	54 15.1	0.53	15 13.8	55 46.8	1.16	15 49.5	57 58.2	1.08
17.0	14 50.7	54 22.2	0.63	15 17.6	56 1.0	1.21	15 52.9	58 10.7	1.01
17.5	14 52.9	54 30.4	0.73	15 21.6	56 15.8	1.25	15 56.1	58 22.3	0.94
18.0	14 55.5	54 39.8	0.83	15 25.8	56 31.0	1.28	15 59.0	58 33.2	0.87
18.5	14 58.4	54 50.4	0.93	15 30.0	56 46.6	1.31	16 1.7	58 43.1	0.80
19.0	15 1.6	55 2.3	1.04	15 34.4	57 2.5	1.34	16 4.2	58 52.2	0.72
19.5	15 5.2	55 15.3	1.15	15 38.8	57 18.9	1.37	16 6.5	59 0.4	0.65
20.0	15 9.1	55 29.7	1.25	15 43.3	57 35.5	1.39	16 8.4	59 7.7	0.56
20.5	15 13.4	55 45.4	1.36	15 47.9	57 52.3	1.40	16 10.1	59 13.9	0.47
21.0	15 18.0	56 2.4	1.46	15 52.5	58 9.3	1.41	16 11.5	59 19.0	0.37
21.5	15 22.9	56 20.5	1.56	15 57.1	58 26.2	1.40	16 12.6	59 22.8	0.26
22.0	15 28.2	56 39.9	1.66	16 1.7	58 42.9	1.37	16 13.2	59 25.3	0.15
22.5	15 33.8	57 0.4	1.75	16 6.1	58 59.1	1.33	16 13.5	59 26.3	+0.01
23.0	15 39.6	57 21.9	1.83	16 10.4	59 14.7	1.25	16 13.3	59 25.6	−0.13
23.5	15 45.6	57 44.3	1.89	16 14.3	59 29.2	1.15	16 12.6	59 23.1	0.29
24.0	15 52.0	58 7.3	1.93	16 17.9	59 42.4	1.03	16 11.4	59 18.5	0.46
24.5	15 58.4	58 30.7	1.94	16 21.0	59 53.8	0.86	16 9.6	59 12.0	0.64
25.0	16 4.7	58 54.0	1.92	16 23.5	60 3.1	0.66	16 7.2	59 3.2	0.81
25.5	16 10.9	59 16.9	1.86	16 25.4	60 9.8	0.44	16 4.3	58 52.4	0.98
26.0	16 16.9	59 38.8	1.76	16 26.4	60 13.6	+0.19	16 0.8	58 39.6	1.14
26.5	16 22.5	59 59.2	1.60	16 26.4	60 14.4	−0.08	15 56.8	58 24.8	1.30
27.0	16 27.4	60 17.4	1.40	16 25.9	60 11.8	0.36	15 52.2	58 8.3	1.43
27.5	16 31.6	60 32.9	1.16	16 24.3	60 5.8	0.64	15 47.4	57 50.4	1.54
28.0	16 35.0	60 45.2	0.87	16 21.7	59 56.4	0.91	15 42.2	57 31.3	1.62
28.5	16 37.3	60 53.8	0.55	16 18.3	59 43.8	1.17	15 36.7	57 11.3	1.68
29.0	16 38.5	60 58.3	+0.20	16 14.0	59 28.1	1.41	15 31.2	56 50.9	1.70
29.5	16 38.6	60 58.4	−0.16	16 9.0	59 9.6	1.63	15 25.6	56 30.5	1.69
30.0	16 37.4	60 54.2	0.53	16 3.3	58 48.9	1.80	15 20.1	56 10.3	1.65
30.5	16 35.1	60 45.5	0.90	15 57.2	58 26.3	1.93	15 14.8	55 50.8	1.58
31.0	16 31.6	60 32.5	1.23	15 50.7	58 2.4	2.01	15 9.8	55 32.4	1.48
31.5	16 27.0	60 15.7	−1.54	15 44.0	57 37.8	−2.06	15 5.2	55 15.3	−1.35

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	15′ 9″.8	55′ 32″.4	−1″.48	14′ 48″.3	54′ 13″.5	−0″.34	14′ 47″.4	54′ 10″.1	+0″.50
1.5	15 5.2	55 15.3	1.35	14 47.5	54 10.5	−0.15	14 49.4	54 17.3	0.70
2.0	15 1.0	55 0.0	1.21	14 47.4	54 10.0	+0.08	14 52.0	54 26.9	0.90
2.5	14 57.3	54 46.5	1.03	14 47.9	54 11.9	0.26	14 55.3	54 39.0	1.11
3.0	14 54.2	54 35.2	0.85	14 49.2	54 16.5	0.48	14 59.2	54 53.6	1.31
3.5	14 51.8	54 26.2	0.65	14 51.1	54 23.7	0.70	15 3.9	55 10.6	1.51
4.0	14 50.0	54 19.6	0.45	14 53.8	54 33.5	0.91	15 9.2	55 30.1	1.71
4.5	14 48.9	54 15.6	0.23	14 57.1	54 45.8	1.12	15 15.1	55 51.8	1.89
5.0	14 48.6	54 14.3	−0.01	15 1.2	55 0.6	1.33	15 21.6	56 15.6	2.06
5.5	14 48.9	54 15.5	+0.21	15 5.9	55 17.8	1.52	15 28.6	56 41.2	2.20
6.0	14 49.9	54 19.3	0.43	15 11.1	55 37.2	1.60	15 36.0	57 8.4	2.30
6.5	14 51.7	54 25.8	0.63	15 16.9	55 58.5	1.83	15 43.7	57 36.7	2.37
7.0	14 54.1	54 34.6	0.83	15 23.2	56 21.4	1.96	15 51.5	58 5.5	2.40
7.5	14 57.1	54 45.8	1.03	15 29.7	56 45.6	2.05	15 59.3	58 34.3	2.37
8.0	15 0.8	54 59.2	1.19	15 36.6	57 10.6	2.10	16 7.0	59 2.5	2.29
8.5	15 4.9	55 14.5	1.34	15 43.5	57 36.0	2.11	16 14.3	59 29.4	2.16
9.0	15 9.6	55 31.5	1.47	15 50.4	58 1.3	2.08	16 21.1	59 54.3	1.96
9.5	15 14.6	55 50.0	1.58	15 57.1	58 25.9	1.99	16 27.1	60 16.4	1.70
10.0	15 19.9	56 9.5	1.66	16 3.4	58 49.2	1.87	16 32.2	60 35.1	1.40
10.5	15 25.4	56 29.7	1.70	16 9.3	59 10.8	1.70	16 36.3	60 50.0	1.06
11.0	15 31.0	56 50.2	1.71	16 14.5	59 30.0	1.48	16 39.2	61 0.6	0.70
11.5	15 36.6	57 10.7	1.69	16 19.0	59 46.5	1.24	16 40.8	61 6.6	+0.31
12.0	15 42.1	57 30.8	1.64	16 22.7	59 59.9	0.97	16 41.1	61 7.8	−0.08
12.5	15 47.3	57 50.1	1.56	16 25.4	60 9.8	0.69	16 40.2	61 4.3	0.46
13.0	15 52.3	58 8.3	1.45	16 27.1	60 16.2	0.39	16 38.1	60 56.5	0.82
13.5	15 56.8	58 25.0	1.32	16 27.9	60 19.1	+0.10	16 34.8	60 44.5	1.14
14.0	16 0.9	58 40.0	1.17	16 27.7	60 18.5	−0.19	16 30.5	60 28.9	1.41
14.5	16 4.4	58 53.0	1.00	16 26.6	60 14.5	0.45	16 25.5	60 10.3	1.64
15.0	16 7.4	59 4.0	0.82	16 24.7	60 7.5	0.68	16 19.8	59 49.3	1.82
15.5	16 9.8	59 12.8	0.64	16 22.1	59 57.9	0.80	16 13.6	59 26.5	1.94
16.0	16 11.6	59 19.4	0.47	16 18.8	59 46.1	1.06	16 7.0	59 2.5	2.01
16.5	16 12.8	59 23.9	0.30	16 15.1	59 32.3	1.20	16 0.4	58 38.0	2.04
17.0	16 13.5	59 26.4	+0.14	16 11.0	59 17.0	1.30	15 53.7	58 13.5	2.03
17.5	16 13.7	59 27.0	−0.02	16 6.6	59 0.8	1.37	15 47.1	57 49.3	1.99
18.0	16 13.4	59 25.9	0.15	16 2.0	58 43.9	1.42	15 40.7	57 25.7	1.92
18.5	16 12.6	59 23.2	0.28	15 57.3	58 26.7	1.44	15 34.5	57 3.1	1.83
19.0	16 11.5	59 19.1	0.39	15 52.5	58 9.3	1.45	15 28.7	56 41.7	1.73
19.5	16 10.1	50 13.8	0.49	15 47.8	57 52.0	1.43	15 23.2	56 21.6	1.62
20.0	16 8.4	59 7.4	0.57	15 43.2	57 34.9	1.41	15 18.1	56 2.8	1.51
20.5	16 6.3	59 0.0	0.65	15 38.6	57 18.1	1.38	15 13.4	55 45.4	1.39
21.0	16 4.1	58 51.8	0.72	15 34.1	57 1.7	1.35	15 9.0	55 29.4	1.28
21.5	16 1.6	58 42.7	0.79	15 29.8	56 45.8	1.32	15 5.0	55 14.8	1.16
22.0	15 58.9	58 32.7	0.86	15 25.6	56 30.3	1.27	15 1.4	55 1.5	1.05
22.5	15 56.0	58 22.0	0.93	15 21.5	56 15.2	1.23	14 58.1	54 49.5	0.95
23.0	15 52.8	58 10.4	1.00	15 17.5	56 0.6	1.19	14 55.2	54 38.8	0.85
23.5	15 49.5	57 58.1	1.05	15 13.7	55 46.5	1.15	14 52.6	54 29.3	0.74
24.0	15 45.9	57 45.0	1.12	15 10.0	55 33.0	1.11	14 50.3	54 21.0	0.63
24.5	15 42.2	57 31.2	1.18	15 6.4	55 20.0	1.06	14 48.4	54 13.9	0.54
25.0	15 38.2	57 16.6	1.23	15 3.1	55 7.6	1.01	14 46.8	54 8.0	0.45
25.5	15 34.1	57 1.5	1.28	14 59.9	54 55.9	0.94	14 45.5	54 3.2	0.35
26.0	15 29.8	56 45.9	1.31	14 56.9	54 45.0	0.87	14 44.6	53 59.7	0.25
26.5	15 25.5	56 29.9	1.33	14 54.2	54 35.1	0.79	14 44.0	53 57.4	0.15
27.0	15 21.1	56 13.8	1.34	14 51.8	54 26.1	0.70	14 43.7	53 56.4	−0.02
27.5	15 16.7	55 57.8	1.32	14 49.7	54 18.4	0.59	14 43.8	53 56.9	+0.10
28.0	15 12.4	55 42.0	1.29	14 47.9	54 12.0	0.48	14 44.3	53 58.9	0.23
28.5	15 8.3	55 26.7	1.24	14 46.6	54 7.0	0.34	14 45.3	54 2.5	0.37
29.0	15 4.3	55 12.1	1.18	14 45.7	54 3.7	0.20	14 46.8	54 7.9	0.52
29.5	15 0.6	54 58.5	1.08	14 45.3	54 2.8	−0.05	14 48.8	54 15.1	0.68
30.0	14 57.2	54 46.1	0.97	14 45.4	54 2.7	+0.12	14 51.3	54 24.3	0.85
30.5	14 54.2	54 35.2	0.84	14 46.1	54 5.2	0.31	14 54.4	54 35.5	1.02
31.0	14 51.7	54 26.0	0.69	14 47.4	54 10.1	0.50	14 58.0	54 48.8	1.19
31.5	14 49.8	54 18.7	−0.52	14 49.4	54 17.3	+0.70	15 2.2	55 4.3	+1.37

WASHINGTON MEAN TIME.

PHASES.

Month.	New Moon.	First Quarter.	Full Moon.	Last Quarter.	New Moon.
	d h m	d h m	d h m	d h m	d h m
January	5 7 21.7	12 23 25.8	19 14 27.7	26 21 39.1	
February	4 1 7.5	11 8 32.1	18 2 32.8	25 18 24.0	
March	5 16 29.9	12 15 39.1	19 15 47.2	27 14 37.7	
April	4 4 55.8	10 22 0.9	18 5 57.8	26 8 52.7	
May	3 14 32.1	10 4 56.1	17 20 44.0	26 0 13.7	
June	1 22 4.3	8 13 29.1	16 11 46.2	24 12 20.8	
July	1 4 40.2	8 0 23.3	16 2 47.6	23 21 27.8	30 11 34.9
August		6 14 0.4	14 17 29.1	22 4 14.2	28 19 56.5
September		5 6 22.9	13 7 25.0	20 9 36.8	27 6 33.8
October		5 1 8.9	12 20 16.1	19 16 8.7	26 19 54.7
November		3 21 19.1	11 8 1.5	17 23 57.7	25 12 2.7
December		3 17 12.4	10 19 1.8	17 10 26.2	25 6 30.8

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	GREATEST LIBRATION.		
	d h	d h	d h	d h m	d h m	d h m
January	2 3.0	17 21.2	29 18.7	11 2 23 N.E.	23 15 22 S.W.	
February		14 17.6	26 14.7	6 17 26 N.E.	20 13 49 S.W.	
March		12 5.7	26 11.5	5 2 28 N.E.	19 19 48 S.W.	
April		7 8.2	23 5.0	1 12 4 N.E.	15 2 33 S.W.	29 10 21 N.E.
May		5 5.7	20 18.4		11 23 30 N.W.	27 13 54 N.E.
June		2 12.8	16 23.6		8 19 20 N.W.	24 18 16 N.E.
July		0 22.3	14 1.9		6 22 50 N.W.	22 17 40 N.E.
July		29 6.4				
August	10 12.9	26 8.6			4 3 12 N.W.	19 2 1 N.E.
September	7 5.3	22 13.1		1 3 45 N.W.	14 8 58 N.E.	28 19 21 N.W.
October	5 0.4	17 10.0			11 5 3 N.E.	25 15 32 N.W.
November	1 20.7	13 15.8	29 15.2		7 21 33 N.E.	20 20 41 N.W.
December		11 21.1	27 1.9		6 1 5 N.E.	18 7 1 N.W.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination to the ecliptic of the moon's equator = 1° 28′.8,

☊ = mean longitude of the moon's ascending node (see page 250),

= mean longitude of the descending node of the moon's equator.

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i, Δ, ☊′, and ☾ are defined on the next page, where their values for the year are given.

λ, β, α', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node. ●

$$\left.\begin{aligned} \Delta\lambda &= -0'.57 \sin 2\,(\text{☊}-\lambda) \\ a &= \sin I \cos(\text{☊}-\lambda) \\ \tan B &= \tan I \sin(\text{☊}-\lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \text{See table, p. 6 of the Appendix.}$$

The libration in latitude $= b = B - \beta$,

" " longitude $= l = \lambda' - \text{☾}$.

$$\sin C = \sin i \,\frac{\cos(\lambda' + \Delta - \text{☊})}{\cos\delta'} = -\sin i\,\frac{\cos(\alpha' - \text{☊}')}{\cos b}.$$

WASHINGTON MEAN TIME.

	MOON'S EQUATOR.			☾ Moon's Mean Longitude.	Mean Solar Days.	Motion of ☾.
Mean Noon.	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascending Node on Earth's Equator.			
Jan. 0	24° 56′.4	357° 34′.3	359° 50′.5	218° 8′.6	0.1	1° 19′.06
10	24 56.3	357 4.3	359 48.6	349 54.4	0.2	2 38.12
20	24 56.2	356 34.3	359 46.6	121 40.3	0.3	3 57.18
30	24 56.1	356 4.3	359 44.7	253 26.1	0.4	5 16.23
Feb. 9	24 56.0	355 34.3	359 42.7	25 12.0	0.5	6 35.29
19	24 55.9	355 4.3	359 40.8	156 57.8	0.6	7 54.35
March 1	24 55.8	354 34.3	359 38.9	288 43 7	0.7	9 13.41
11	24 55.7	354 4.3	359 37.0	60 29.5	0.8	10 32.47
21	24 55.6	353 34.3	359 35.0	192 15.4	0.9	11 51.53
31	24 55.5	353 4.3	359 33.1	324 1.2		
April 10	24 55.4	352 34.3	359 31.2	95 47.1	1.0	13 10.58
20	24 55.3	352 4.3	359 29.3	227 32.9	2.0	26 21.17
30	24 55.2	351 34.3	359 27.3	359 18.8	3.0	39 31.75
May 10	24 55.0	351 4.2	359 25.4	131 4.6	4.0	52 42.33
20	24 54.9	350 34.2	359 23.4	262 50.5	5.0	65 52.92
30	24 54.8	350 4.2	359 21.5	34 36.3	6.0	79 3.50
June 9	24 54.6	349 34.2	359 19.6	166 22.1	7.0	92 14.09
19	24 54.5	349 4.1	359 17.7	298 8.0	8.0	105 24.67
29	24 54.3	348 34.1	359 15.8	69 53.8	9.0	118 35.25
July 9	24 54.2	348 4.0	359 13.9	201 39.7	10.0	131 45.84
					h.	
19	24 54.0	347 34.0	359 12.0	333 25.5	1	0 32.94
29	24 53.8	347 4.0	359 10.1	105 11.4	2	1 5.88
Aug. 8	24 53.6	346 33.9	359 8.2	236 57.2	3	1 38 82
18	24 53.4	346 3.9	359 6.3	8 43.1	4	2 11.76
28	24 53.2	345 33.8	359 4.4	140 28.9	5	2 44.70
Sept. 7	24 53.0	345 3.8	359 2.5	272 14.8	6	3 17.64
17	24 52.8	344 33.7	359 0.6	44 0.6	7	3 50.59
27	24 52.6	344 3.7	358 58.8	175 46.5	8	4 23.53
Oct. 7	24 52.3	343 33.6	358 56.9	307 32.3	9	4 56.47
17	24 52.1	343 3.6	358 55.1	79 18.2	10	5 29.41
27	24 51.9	342 33.5	358 53.2	211 4.0	11	6 2.35
Nov. 6	24 51.6	342 3.4	358 51.4	342 49.8	12	6 35.29
16	24 51.4	341 33.3	358 49.5	114 35.7	13	7 8.23
26	24 51.1	341 3.3	358 47.7	246 21.5	14	7 41.17
Dec. 6	24 50.9	340 33.2	358 45.8	18 7.4	15	8 14.11
16	24 50.6	340 3.1	358 44.0	149 53.2	16	8 47.05
26	24 50.3	339 33.0	358 42.2	281 39.1	17	9 19.99
36	24 50.0	339 2.9	358 40.3	53 24.9	18	9 52.93

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Jan. 1	17 13 46.18	13 26.40	−21 48 47.2	47 52.9	+9.34332	−9.7809	+4.33	+4.89	0 22 30.2
2	17 19 7.92	18 47.93	22 2 59.7	2 8.5	9.35471	9.7632	4.29	4.96	1 22 31.6
3	17 24 37.70	24 17.59	22 16 34.7	15 46.7	9.36480	9.7418	4.25	5.01	2 22 33.1
4	17 30 14.80	29 54.67	22 29 27.2	28 42.7	9.37382	9.7166	4.21	5.05	3 22 34.8
5	17 35 58.61	35 38.53	22 41 32.9	40 52.2	9.38194	9.6874	4.17	5.09	4 22 36.6
6	17 41 48.58	41 28.61	22 52 48.0	52 11.2	9.38927	9.6536	4.13	5.12	5 22 38.5
7	17 47 44.20	47 24.41	23 3 9.0	2 36.2	9.39587	9.6146	4.10	5.14	6 22 40.4
8	17 53 45.02	53 25.48	23 12 32.7	12 3.9	9.40188	9.5692	4.06	5.16	7 22 42.5
9	17 59 50.64	59 31.40	23 20 56.3	20 31.5	9.40736	9.5162	4.03	5.18	8 22 44.7
10	18 6 0.69	5 41.80	23 28 17.3	27 56.4	9.41236	9.4533	3.99	5.19	9 22 46.9
11	18 12 14.83	11 56.34	23 34 33.4	34 16.3	9.41693	9.3767	3.96	5.21	10 22 49.2
12	18 18 32.77	18 14.72	23 39 42.4	39 29.1	9.42113	9.2807	3.93	5.22	11 22 51.6
13	18 24 54.23	24 36.66	23 43 42.4	43 32.8	9.42500	9.1532	3.90	5.23	12 22 54.0
14	18 31 18.96	31 1.91	23 46 31.6	46 25.6	9.42855	8.9665	3.87	5.24	13 22 56.4
15	18 37 46.73	37 30.23	23 48 8.4	48 5.8	9.43183	−8.6191	3.83	5.25	14 22 58.9
16	18 44 17.33	44 1.41	23 48 31.3	48 31.8	9.43486	+8.0060	3.80	5.26	15 23 1.5
17	18 50 50.55	50 35.24	23 47 38.9	47 42.3	9.43765	8.7983	3.77	5.27	16 23 4.2
18	18 57 26.21	57 11.54	23 45 29.9	45 36.0	9.44023	9.0668	3.74	5.27	17 23 6.8
19	19 4 4.13	3 50.13	23 42 3.1	42 11.7	9.44261	9.2327	3.71	5.28	18 23 9.5
20	19 10 44.15	10 30.84	23 37 17.4	37 28.2	9.44481	9.3542	3.67	5.29	19 23 12.2
21	19 17 26.12	17 13.52	23 31 11.7	31 24.4	9.44683	9.4502	3.64	5.29	20 23 15.0
22	19 24 9.90	23 58.03	23 23 45.1	23 59.4	9.44871	9.5295	3.61	5.30	21 23 17.8
23	19 30 55.36	30 44.24	23 14 56.6	15 12.2	9.45043	9.5974	3.57	5.30	22 23 20.6
24	19 37 42.37	37 32.02	23 4 45.3	5 1.9	9.45203	9.6566	3.54	5.30	23 23 23.4
25	19 44 30.81	44 21.24	22 53 10.4	53 27.7	9.45349	9.7090	3.50	5.31	24 23 26.3
26	19 51 20.57	51 11.79	22 40 11.2	40 28.8	9.45483	9.7563	3.47	5.31	25 23 29.2
27	19 58 11.54	58 3.57	22 25 47.1	26 4.6	9.45606	9.7992	3.43	5.31	26 23 32.1
28	20 5 3.62	4 56.47	22 9 57.4	10 14.5	9.45718	9.8385	3.39	5.32	27 23 35.0
29	20 11 56.72	11 50.40	21 52 41.4	52 57.8	9.45820	9.8748	3.35	5.32	28 23 38.0
30	20 18 50.75	18 45.27	21 33 58.5	34 13.9	9.45913	9.9085	3.31	5.32	29 23 41.0
31	20 25 45.63	25 41.00	21 13 48.3	14 2.3	9.45998	9.9399	3.28	5.33	30 23 43.9
Feb. 1	20 32 41.29	32 37.51	20 52 10.3	52 22.5	9.46075	9.9694	3.23	5.33	0 23 46.9
2	20 39 37.65	39 34.73	20 29 4.0	29 14.0	9.46145	9.9972	3.18	5.33	1 23 49.9
3	20 46 34.64	46 32.59	20 4 29.1	4 36.5	9.46207	0.0233	3.13	5.33	2 23 52.9
4	20 53 32.19	53 31.02	19 38 25.4	38 29.9	9.46262	0.0480	3.08	5.33	3 23 56.0
5	21 0 30.23	0 29.95	19 10 52.7	10 53.9	9.46310	0.0714	3.03	5.33	4 23 59.0
6	21 7 28.71	7 29.31	18 41 50.7	41 48.2	9.46352	0.0937	2.96	5.33	6 0 2.0
7	21 14 27.57	14 29.05	18 11 19.4	11 12.7	9.46387	0.1149	2.87	5.33	7 0 5.1
8	21 21 26.74	21 29.11	17 39 18.8	39 7.6	9.46418	0.1351	2.78	5.33	8 0 8.1
9	21 28 26.16	28 29.42	17 5 49.1	5 33.1	9.46438	0.1543	2.61	5.33	9 0 11.2
10	21 35 25.75	35 29.90	16 30 50.6	30 29.4	9.46452	0.1726	+2.34	5.33	10 0 14.2
11	21 42 25.43	42 30.47	15 54 23.8	53 57.0	9.46458	0.1901	−1.38	5.32	11 0 17.3
12	21 49 25.10	49 31.03	15 16 29.4	15 56.6	9.46452	0.2068	2.42	5.32	12 0 20.4
13	21 56 24.66	56 31.48	14 37 8.4	36 29.3	9.46433	0.2226	2.76	5.31	13 0 23.4
14	22 3 23.98	3 31.68	13 56 22.0	55 36.3	9.46400	0.2376	3.00	5.31	14 0 26.5
15	22 10 22.89	10 31.47	13 14 11.8	13 19.2	9.46348	0.2518	3.16	5.30	15 0 29.5
16	22 17 21.20	17 30.65	12 30 39.8	29 39.9	9.46275	0.2652	3.30	5.28	16 0 32.5
17	22 24 18.68	24 28.98	11 45 48.4	44 41.0	9.46176	0.2778	3.42	5.26	17 0 35.6
18	22 31 15.06	31 26.19	10 59 40.7	58 25.6	9.46045	0.2895	3.54	5.24	18 0 38.6
19	22 38 10.01	38 21.95	10 12 20.5	10 57.5	9.45875	0.3003	3.65	5.21	19 0 41.6
20	22 45 3.11	45 15.84	9 23 52.3	22 21.4	9.45656	0.3101	3.75	5.18	20 0 44.5
21	22 51 53.87	52 7.35	8 34 21.5	32 42.8	9.45379	0.3188	3.85	5.13	21 0 47.4
22	22 58 41.71	58 55.89	7 43 54.5	42 8.0	9.45034	0.3263	3.94	5.07	22 0 50.3
23	23 5 25.96	5 40.77	6 52 38.8	50 44.7	9.44607	0.3326	4.02	4.99	23 0 53.1
24	23 12 5.82	12 21.20	5 60 43.0	58 41.7	9.44084	0.3375	4.11	4.86	24 0 55.8
25	23 18 40.38	18 56.25	5 8 17.2	6 9.2	9.43445	0.3409	4.19	4.65	25 0 58.4
26	23 25 8.58	25 24.85	4 15 32.9	13 18.8	9.42669	0.3426	4.26	+4.15	26 1 0.9
27	23 31 29.24	31 45.79	3 22 42.9	20 23.6	9.41736	0.3424	4.33	−4.31	27 1 3.3
28	23 37 41.04	37 57.74	2 30 1.5	27 38.0	9.40618	0.3402	4.40	4.77	28 1 5.6
29	23 43 42.52	43 59.23	1 37 44.3	35 17.8	9.39285	0.3357	4.46	5.00	29 1 7.7
30	23 49 32.10	49 48.66	− 0 46 8.2	43 40.1	9.37705	0.3287	4.52	5.15	30 1 9.6
31	23 55 8.11	55 24.35	+ 0 4 28.9	6 57.1	+9.35837	+0.3190	+4.57	−5.27	31 1 11.2

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Polar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1	23 43 42.52	43 59.23	− 1 37 44.3	35 17.8	+9.39285	+0.3357	−4.46	−5.00	1 1 7.7
2	23 49 32.10	49 48.66	− 0 46 8.2	43 40.1	9.37705	0.3287	4.52	5.15	2 1 9.6
3	23 55 8.11	55 24.35	+ 0 4 28.9	6 57.1	9.35837	0.3190	4.57	5.27	3 1 11.2
4	0 0 28.80	0 44.54	0 53 48.4	56 15.1	9.33639	0.3062	4.62	5.37	4 1 12.6
5	0 5 32.37	5 47.42	1 41 31.2	43 54.7	9.31058	0.2900	4.66	5.45	5 1 13.7
6	0 10 17.01	10 31.19	2 27 17.8	29 36.3	9.28031	0.2701	4.70	5.51	6 1 14.5
7	0 14 40.94	14 54.07	3 10 48.7	13 0.5	9.24473	0.2459	4.73	5.57	7 1 14.9
8	0 18 42.42	18 54.35	3 51 45.0	53 48.4	9.20282	0.2169	4.76	5.62	8 1 14.9
9	0 22 19.84	22 30.43	4 29 48.5	31 41.8	9.15318	0.1823	4.79	5.66	9 1 14.6
10	0 25 31.75	25 40.88	5 4 41.7	6 23.6	9.09376	0.1411	4.81	5.70	10 1 13.9
11	0 28 16.84	28 24.44	5 36 8.5	37 37.9	9.02145	0.0917	4.83	5.73	11 1 12.7
12	0 30 34.02	30 40.05	6 3 54.0	5 10.1	8.93133	0.0320	4.84	5.75	12 1 11.0
13	0 32 22.49	32 26.95	6 27 44.7	28 47.0	8.81435	9.9586	4.85	5.77	13 1 8.8
14	0 33 41.73	33 44.67	6 47 28.9	48 17.2	8.65140	9.8660	4.85	5.79	14 1 6.2
15	0 34 31.55	34 33.06	7 2 56.9	3 31.5	8.38732	9.7432	4.85	5.80	15 1 3.1
16	0 34 52.11	34 52.34	7 14 1.0	14 22.7	+7.62626	9.5662	4.84	5.81	16 0 59.4
17	0 34 43.99	34 43.12	7 20 36.3	20 46.1	−8.18721	+9.2564	4.82	5.82	17 0 55.3
18	0 34 8.19	34 6.44	7 22 40.6	22 40.0	8.53361	−7.8870	4.80	5.81	18 0 50.8
19	0 33 6.16	33 3.77	7 20 15.1	20 6.0	8.71415	9.2874	4.77	5.81	19 0 45.8
20	0 31 39.80	31 37.04	7 13 24.8	13 9.5	8.83189	9.5740	4.72	5.79	20 0 40.4
21	0 29 51.47	29 48.60	7 2 19.0	1 59.8	8.91507	9.7390	4.67	5.77	21 0 34.7
22	0 27 43.93	27 41.21	6 47 10.9	46 50.4	8.97563	9.8517	4.59	5.73	22 0 28.7
23	0 25 20.30	25 17.96	6 23 18.4	27 59.2	9.01929	9.9342	4.48	5.69	23 0 22.4
24	0 22 44.02	22 42.24	6 6 3.9	5 48.2	9.04957	9.9961	4.34	5.63	24 0 15.8
25	0 19 58.71	19 57.64	5 40 53.5	40 43.4	9.06842	0.0427	4.11	5.55	25 0 9.1
26	0 17 8.12	17 7.84	5 13 16.7	13 13.8	9.07707	0.0770	−3.57	5.44	26 0 2.4
27	0 14 15.99	14 16.51	4 43 45.4	43 50.9	9.07636	0.1011	+3.70	5.29	26 23 55.6
28	0 11 25.92	11 27.21	4 12 52.9	13 7.4	9.06661	0.1162	4.12	5.16	27 23 48.9
29	0 8 41.34	8 43.31	3 41 12.8	41 36.4	9.04784	0.1233	4.32	−4.54	28 23 42.2
30	0 6 5.35	6 7.88	3 9 18.2	9 50.4	9.01990	0.1230	4.44	+4.61	29 23 35.7
31	0 3 40.69	3 43.62	2 37 40.2	38 20.1	8.98209	0.1158	4.52	5.04	30 23 29.4
Apr. 1	0 1 29.70	1 32.85	2 6 47.5	7 33.9	8.93327	0.1020	4.58	5.23	0 23 23.3
2	23 59 34.30	59 37.47	1 37 5.7	37 57.1	8.87136	0.0819	4.62	5.35	1 23 17.4
3	23 57 56.00	57 58.99	1 8 56.7	9 51.5	8.79273	0.0554	4.64	5.43	2 23 11.9
4	23 56 35.90	56 38.53	0 42 39.1	43 35.4	8.69118	0.0225	4.66	5.49	3 23 6.6
5	23 55 34.73	55 36.84	+ 0 18 27.9	19 24.0	8.55378	9.9827	4.67	5.52	4 23 1.7
6	23 54 52.90	54 54.33	− 0 3 25.5	2 31.1	8.34814	9.9356	4.67	5.55	5 22 57.0
7	23 54 30.53	54 31.14	0 22 52.8	22 1.5	−7.94442	9.8800	4.67	5.56	6 22 52.7
8	23 54 27.51	54 27.20	0 39 48.4	39 1.7	+7.65921	9.8141	4.66	5.57	7 22 48.7
9	23 54 43.55	54 42.25	0 54 8.9	53 28.0	8.24699	9.7351	4.65	5.58	8 22 45.0
10	23 55 18.20	55 15.85	1 5 52.9	5 18.7	8.48282	9.6381	4.64	5.58	9 22 41.7
11	23 56 10.89	56 7.44	1 15 0.8	14 34.0	8.63044	9.5138	4.62	5.57	10 22 38.6
12	23 57 20.96	57 16.39	1 21 34.2	21 15.4	8.73673	9.3424	4.61	5.56	11 22 35.8
13	23 58 47.74	58 42.05	1 25 35.5	25 25.2	8.81891	9.0625	4.58	5.55	12 22 33.3
14	0 0 30.51	0 23.71	1 27 8.1	27 6.6	8.88508	−8.1294	4.56	5.54	13 22 31.0
15	0 2 28.53	2 20.64	1 26 15.8	26 23.3	8.93907	+8.9333	4.54	5.53	14 22 29.0
16	0 4 41.08	4 32.13	1 23 2.8	23 19.4	8.98643	9.2598	4.52	5.52	15 22 27.3
17	0 7 7.45	6 57.47	1 17 33.6	17 59.2	9.02650	9.4391	4.50	5.50	16 22 25.8
18	0 9 46.97	9 36.00	1 9 52.8	10 27.3	9.06146	9.5619	4.48	5.49	17 22 24.5
19	0 12 39.00	12 27.09	1 0 5.1	0 48.3	9.09226	9.6543	4.46	5.47	18 22 23.4
20	0 15 42.92	15 30.11	0 48 15.0	49 6.8	9.11964	9.7280	4.44	5.45	19 22 22.5
21	0 18 58.16	18 44.50	0 34 27.1	35 27.2	9.14423	9.7887	4.42	5.44	20 22 21.8
22	0 22 24.19	22 9.73	0 18 45.9	19 53.9	9.16648	9.8401	4.40	5.42	21 22 21.3
23	0 26 0.53	25 45.33	− 0 1 15.7	2 31.3	9.18672	9.8843	4.38	5.40	22 22 21.0
24	0 29 46.74	29 30.84	+ 0 17 59.2	16 36.3	9.20527	9.9229	4.36	5.39	23 22 20.8
25	0 33 42.43	33 25.88	0 38 54.6	37 24.9	9.22241	9.9570	4.34	5.37	24 22 20.8
26	0 37 47.24	37 30.09	0 61 26.6	59 50.6	9.23829	9.9875	4.33	5.35	25 22 20.9
27	0 42 0.85	41 43.16	1 25 31.5	23 49.5	9.25312	0.0149	4.31	5.33	26 22 21.1
28	0 46 23.00	46 4.81	1 51 5.6	49 17.9	9.26708	0.0396	4.30	5.31	27 22 21.5
29	0 50 53.47	50 34.82	2 18 5.1	16 12.3	9.28029	0.0620	4.29	5.30	28 22 22.1
30	0 55 32.08	55 13.02	2 46 26.6	44 29.2	9.29284	0.0825	4.28	5.28	29 22 22.8
31	0 60 18.67	59 59.25	+ 3 16 6.7	14 5.2	+9.30485	+0.1013	+4.28	+5.26	30 22 23.6

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
May 1	0 60 18.67	50 59.25	+ 3 16 6.7	14 5.2	+9.30485	+0.1013	+4.28	+5.26	0 22 23.6
2	1 5 13.13	4 53.38	3 47 2.1	44 56.9	9.31640	0.1186	4.27	5.24	1 22 24.6
3	1 10 15.39	9 55.35	4 19 9.5	17 1.1	9.32757	0.1345	4.27	5.22	2 22 25.7
4	1 15 25.43	15 5.14	4 52 25.8	50 14.7	9.33846	0.1491	4.27	5.20	3 22 26.9
5	1 20 43.23	20 22.75	5 26 47.7	24 34.4	9.34908	0.1625	4.27	5.18	4 22 28.2
6	1 26 8.83	25 48.19	5 62 11.8	59 56.9	9.35952	0.1749	4.28	5.15	5 22 29.7
7	1 31 42.30	31 21.54	6 38 35.0	36 19.0	9.36984	0.1864	4.28	5.13	6 22 31.3
8	1 37 23.75	37 2.91	7 15 54.2	13 37.5	9.38006	0.1969	4.29	5.10	7 22 33.1
9	1 43 13.30	42 52.42	7 54 5.8	51 49.0	9.39020	0.2065	4.30	5.07	8 22 35.0
10	1 49 11.09	48 50.23	8 33 6.2	30 50.0	9.40032	0.2152	4.31	5.04	9 22 37.0
11	1 55 17.33	54 56.53	9 12 51.8	10 36.7	9.41046	0.2231	4.32	5.00	10 22 39.1
12	2 1 32.23	1 11.54	9 53 18.6	51 5.2	9.42062	0.2301	4.33	4.95	11 22 41.4
13	2 7 56.01	7 35.49	10 34 22.5	32 11.4	9.43080	0.2363	4.34	4.90	12 22 43.9
14	2 14 28.90	14 8.62	11 15 59.1	13 50.9	9.44102	0.2415	4.36	4.82	13 22 46.5
15	2 21 11.17	20 51.18	11 58 3.3	55 58.7	9.45130	0.2458	4.37	4.73	14 22 49.2
16	2 28 3.09	27 43.46	12 40 20.9	38 29.5	9.46160	0.2492	4.38	4.61	15 22 52.1
17	2 35 4.91	34 45.72	13 23 13.3	21 17.7	9.47192	0.2515	4.39	4.40	16 22 55.2
18	2 42 16.88	41 58.22	14 6 7.2	4 17.1	9.48224	0.2527	4.40	+3.93	17 22 58.5
19	2 49 39.24	49 21.20	14 49 4.6	47 20.6	9.49255	0.2527	4.41	–4.00	18 23 1.9
20	2 57 12.17	56 54.85	15 31 57.9	30 20.7	9.50277	0.2513	4.41	4.48	19 23 5.5
21	3 4 55.82	4 39.33	16 14 38.8	13 9.0	9.51286	0.2485	4.42	4.71	20 23 9.3
22	3 12 50.27	12 34.72	16 56 58.2	55 36.3	9.52275	0.2440	4.42	4.88	21 23 13.3
23	3 20 55.51	20 41.02	17 38 46.3	37 32.8	9.53239	0.2377	4.41	5.00	22 23 17.4
24	3 29 11.47	28 58.16	18 19 52.7	18 48.0	9.54169	0.2294	4.40	5.11	23 23 21.8
25	3 37 37.91	37 25.92	18 60 6.3	59 10.5	9.55055	0.2188	4.39	5.19	24 23 26.3
26	3 46 14.48	46 3.95	19 39 15.2	38 28.5	9.55888	0.2057	4.37	5.27	25 23 30.9
27	3 55 0.67	54 51.74	20 17 7.1	16 29.6	9.56656	0.1898	4.34	5.33	26 23 35.8
28	4 3 55.82	3 48.62	20 53 20.7	53 1.2	9.57352	0.1708	4.29	5.39	27 23 40.8
29	4 12 59.10	12 53.74	21 28 10.6	27 50.8	9.57965	0.1483	4.24	5.44	28 23 45.9
30	4 22 9.52	22 6.11	22 0 57.7	0 46.0	9.58485	0.1218	4.16	5.48	29 23 51.2
31	4 31 25.95	31 24.60	22 31 39.6	31 35.3	9.58906	0.0910	4.06	5.52	30 23 56.5
June 1	4 40 47.11	40 47.89	23 0 5.7	0 8.0	9.59219	0.0552	3.91	5.55	1 0 1.9
2	4 50 11.62	50 14.56	23 26 6.6	26 14.3	9.59423	0.0135	3.66	5.57	2 0 7.4
3	4 59 38.04	59 43.15	23 49 34.2	49 46.2	9.59513	9.9651	+3.01	5.58	3 0 13.0
4	5 9 4.88	9 12.15	24 10 22.5	10 37.5	9.59488	9.9087	–3.42	5.60	4 0 18.5
5	5 18 30.64	18 40.05	24 28 26.9	28 43.6	9.59348	9.8422	3.79	5.60	5 0 24.0
6	5 27 53.86	28 5.35	24 43 44.8	44 1.9	9.59097	9.7629	3.98	5.61	6 0 29.4
7	5 37 13.15	37 26.63	24 56 15.1	56 31.3	9.58740	9.6656	4.10	5.60	7 0 34.8
8	5 46 27.21	46 42.57	25 5 58.6	6 12.5	9.58281	9.5411	4.19	5.60	8 0 40.2
9	5 55 34.83	55 51.96	25 12 57.4	13 7.9	9.57726	9.3699	4.26	5.59	9 0 45.4
10	6 4 34.93	4 53.69	25 17 15.0	17 21.1	9.57081	9.0930	4.31	5.58	10 0 50.4
11	6 13 26.55	13 46.80	25 18 56.1	18 56.9	9.56353	+8.2326	4.35	5.56	11 0 55.3
12	6 22 8.87	22 30.46	25 18 6.2	18 0.9	9.55548	–8.9330	4.38	5.54	12 1 0.1
13	6 30 41.17	31 3.95	25 14 51.5	14 39.4	9.54672	9.2647	4.41	5.52	13 1 4.7
14	6 39 2.85	39 26.67	25 9 18.8	8 59.4	9.53729	9.4429	4.43	5.50	14 1 9.2
15	6 47 13.42	47 38.12	25 1 35.3	1 8.3	9.52726	9.5630	4.44	5.47	15 1 13.4
16	6 55 12.47	55 37.89	24 51 48.4	51 13.5	9.51665	9.6519	4.46	5.45	16 1 17.4
17	7 2 59.66	3 25.67	24 40 5.5	39 22.5	9.50550	9.7215	4.47	5.42	17 1 21.3
18	7 10 34.74	11 1.20	24 26 34.2	25 43.1	9.49385	9.7776	4.47	5.39	18 1 24.9
19	7 17 57.52	18 24.29	24 11 22.1	10 23.0	9.48170	9.8239	4.48	5.35	19 1 28.3
20	7 25 7.85	25 34.80	23 54 36.6	53 29.6	9.46907	9.8628	4.48	5.32	20 1 31.6
21	7 32 5.62	32 32.62	23 36 24.8	35 10.2	9.45596	9.8957	4.48	5.28	21 1 34.6
22	7 38 50.74	39 17.68	23 16 53.9	15 32.0	9.44236	9.9237	4.49	5.24	22 1 37.4
23	7 45 23.14	45 49.92	22 56 11.0	54 42.2	9.42826	9.9477	4.49	5.20	23 1 40.0
24	7 51 42.78	52 9.29	22 34 23.0	32 47.7	9.41363	9.9682	4.49	5.15	24 1 42.4
25	7 57 49.61	58 15.74	22 11 36.5	9 55.2	9.39644	9.9857	4.49	5.10	25 1 44.5
26	8 3 43.58	4 9.23	21 47 58.0	46 11.2	9.38263	0.0007	4.49	5.04	26 1 46.5
27	8 9 24.64	9 49.73	21 23 34.0	21 42.2	9.36615	0.0133	4.49	4.98	27 1 48.2
28	8 14 52.74	15 17.19	20 58 30.6	56 34.5	9.34894	0.0238	4.50	4.91	28 1 49.7
29	8 20 7.80	20 31.54	20 32 53.9	30 54.2	9.33092	0.0323	4.50	4.82	29 1 51.0
30	8 25 9.74	25 32.69	20 6 50.0	4 47.4	9.31199	0.0390	4.50	4.71	30 1 52.0
31	8 29 58.47	30 20.55	+19 40 25.0	38 20.1	+9.29200	–0.0440	–4.51	–4.56	31 1 52.9

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
July 1	8 29 58.47	30 20.55	+19 40 25.0	38 20.1	+9.29200	−0.0440	−4.51	−4.56	1 1 52.9
2	8 34 33.85	34 54.99	19 13 44.8	11 38.3	9.27083	0.0473	4.51	4.35	2 1 53.6
3	8 38 55.72	39 15.86	18 46 55.4	44 47.9	9.24827	0.0490	4.52	−3.90	3 1 53.9
4	8 43 3.90	43 22.98	18 20 2.7	17 54.9	9.22414	0.0491	4.53	+3.80	4 1 54.1
5	8 46 58.19	47 16.15	17 53 12.6	51 5.3	9.19817	0.0476	4.53	4.32	5 1 54.1
6	8 50 38.35	50 55.13	17 26 31.1	24 25.1	9.17003	0.0444	4.54	4.55	6 1 53.8
7	8 54 4.11	54 19.67	16 60 4.4	58 0.5	9.13933	0.0395	4.55	4.70	7 1 53.3
8	8 57 15.19	57 29.48	16 33 58.7	31 57.5	9.10558	0.0328	4.56	4.82	8 1 52.5
9	9 0 11.27	0 24.25	16 8 20.2	6 22.4	9.06814	0.0243	4.57	4.91	9 1 51.4
10	9 2 52.00	3 3.64	15 43 15.3	41 21.7	9.02613	0.0136	4.58	4.99	10 1 50.1
11	9 5 17.01	5 27.29	15 18 50.7	17 2.0	8.97842	0.0007	4.59	5.05	11 1 48.6
12	9 7 25.92	7 34.82	14 55 13.1	53 30.0	8.92346	9.9852	4.60	5.11	12 1 46.8
13	9 9 18.33	9 25.84	14 32 29.3	30 52.4	8.85876	9.9670	4.61	5.17	13 1 44.7
14	9 10 53.82	10 59.95	14 10 46.3	9 16.2	8.78066	9.9455	4.62	5.22	14 1 42.4
15	9 12 11.99	12 16.75	13 50 11.5	48 48.7	8.68287	9.9202	4.63	5.26	15 1 39.7
16	9 13 12.45	13 15.87	13 30 52.3	29 37.3	8.55336	9.8905	4.64	5.30	16 1 36.7
17	9 13 54.86	13 56.98	13 12 56.0	11 49.2	8.36395	9.8555	4.65	5.34	17 1 33.5
18	9 14 18.92	14 19.80	12 56 29.9	55 31.6	+8.01161	9.8141	4.65	5.37	18 1 29.9
19	9 14 24.37	14 24.10	12 41 41.3	40 51.6	−7.43382	9.7646	4.66	5.40	19 1 26.1
20	9 14 11.05	14 9.73	12 28 37.5	27 56.3	8.19805	9.7044	4.66	5.43	20 1 21.9
21	9 13 38.94	13 36.68	12 17 25.4	16 52.6	8.45948	9.6298	4.65	5.45	21 1 17.4
22	9 12 48.16	12 45.10	12 8 11.5	7 46.8	8.62001	9.5343	4.65	5.48	22 1 12.6
23	9 11 39.00	11 35.30	12 1 1.5	0 44.4	8.73485	9.4055	4.64	5.49	23 1 7.5
24	9 10 11.95	10 7.80	11 56 0.3	55 50.2	8.82282	9.2134	4.62	5.51	24 1 2.2
25	9 8 27.75	8 23.33	11 53 11.9	53 8.0	8.89264	−8.8460	4.59	5.51	25 0 56.5
26	9 6 27.41	6 22.91	11 52 39.0	52 40.3	8.94885	+8.3906	4.55	5.52	26 0 50.6
27	9 4 12.24	4 7.86	11 54 22.7	54 28.1	8.99414	9.0772	4.50	5.52	27 0 44.4
28	9 1 43.87	1 39.80	11 58 22.5	58 30.7	9.03015	9.3291	4.43	5.51	28 0 38.0
29	8 59 4.23	50 0.65	12 4 35.9	4 45.5	9.05791	9.4840	4.34	5.49	29 0 31.4
30	8 56 15.59	56 12.64	12 12 58.5	13 8.2	9.07786	9.5938	4.19	5.47	30 0 24.7
31	8 53 20.50	53 18.30	12 23 23.6	23 32.1	9.09057	9.6764	3.94	5.44	31 0 17.9
Aug. 1	8 50 21.80	50 20.43	12 35 42.6	35 48.6	9.09570	9.7406	−3.13	5.40	1 0 11.0
2	8 47 22.54	47 22.03	12 49 44.9	49 47.3	9.09323	9.7910	+3.81	5.34	2 0 4.1
3	8 44 25.92	44 26.25	13 5 18.1	5 16.2	9.08269	9.8302	4.16	5.27	2 23 57.2
4	8 41 35.23	41 36.33	13 22 8.4	22 1.5	9.06337	9.8603	4.35	5.17	3 23 50.5
5	8 38 53.76	38 55.51	13 40 0.7	39 48.4	9.03412	9.8823	4.48	5.05	4 23 43.9
6	8 36 24.75	36 26.98	13 58 39.2	58 21.4	8.99310	9.8971	4.58	4.86	5 23 37.4
7	8 34 11.31	34 13.80	14 17 47.5	17 24.4	8.93740	9.9052	4.65	+4.51	6 23 31.3
8	8 32 16.33	32 18.85	14 37 9.1	36 41.2	8.86217	9.9071	4.71	−3.89	7 23 25.5
9	8 30 42.44	30 44.74	14 56 27.6	55 55.6	8.75836	9.9029	4.75	4.67	8 23 20.0
10	8 29 31.96	29 33.79	15 15 26.9	14 51.7	8.60574	9.8926	4.79	4.92	9 23 14.9
11	8 28 46.89	28 48.01	15 33 51.4	33 14.0	8.34379	9.8759	4.82	5.08	10 23 10.2
12	8 28 28.90	28 29.07	15 51 26.1	50 47.6	−7.44261	9.8523	4.84	5.19	11 23 5.9
13	8 28 39.30	28 38.32	16 7 56.5	7 18.1	+8.23871	9.8210	4.85	5.27	12 23 2.1
14	8 29 19.06	29 16.76	16 23 8.9	22 31.9	8.57947	9.7807	4.86	5.34	13 22 58.8
15	8 30 28.81	30 25.07	16 36 50.3	36 15.9	8.77045	9.7201	4.86	5.40	14 22 56.0
16	8 32 8.88	32 3.61	16 48 48.2	48 17.5	8.90332	9.6626	4.86	5.44	15 22 53.8
17	8 34 19.29	34 12.45	16 58 50.7	58 25.0	9.00456	9.5749	4.86	5.48	16 22 52.0
18	8 36 59.77	36 51.36	17 6 46.6	6 26.7	9.08557	9.4535	4.85	5.52	17 22 50.7
19	8 40 9.78	39 59.85	17 12 25.4	12 12.2	9.15242	9.2681	4.84	5.55	18 22 49.9
20	8 43 48.54	43 37.18	17 15 37.4	15 31.5	9.20862	+8.9046	4.83	5.58	19 22 49.6
21	8 47 55.01	47 42.35	17 16 13.7	16 15.6	9.25648	−8.4880	4.80	5.60	20 22 49.7
22	8 52 27.92	52 14.12	17 14 6.4	14 16.4	9.29747	9.1667	4.78	5.61	21 22 50.3
23	8 57 25.78	57 11.02	17 9 8.9	9 27.0	9.33271	9.4264	4.75	5.63	22 22 51.3
24	9 2 46.89	2 31.38	17 1 16.2	1 42.3	9.36293	9.5011	4.71	5.63	23 22 52.7
25	9 8 29.37	8 13.34	16 50 24.9	50 58.5	9.38881	9.7117	4.67	5.64	24 22 54.4
26	9 14 31.21	14 14.88	16 36 33.2	37 13.6	9.41079	9.8063	4.62	5.64	25 22 56.5
27	9 20 50.27	20 33.86	16 19 41.4	20 27.9	9.42929	9.8835	4.56	5.63	26 22 58.9
28	9 27 24.36	27 8.08	15 59 51.9	60 43.7	9.44463	9.9478	4.49	5.62	27 23 1.5
29	9 34 11.24	33 55.30	15 37 8.9	36 4.8	9.45710	0.0023	4.41	5.61	28 23 4.3
30	9 41 8.70	40 53.28	15 11 38.4	12 37.2	9.46608	0.0489	4.31	5.59	29 23 7.3
31	9 48 14.60	47 59.85	+14 43 28.1	44 28.7	+9.47453	−0.0889	+4.19	−5.56	30 23 10.5

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1	9 55 26.90	55 12.95	+14 12 47.2	13 48.5	+9.47909	−0.1233	+4.04	-5.53	0 23 13.8
2	10 2 43.72	2 30.67	13 39 46.1	40 47.0	9.48360	0.1529	3.83	5.49	1 23 17.1
3	10 10 3.34	9 51.26	13 4 35.8	5 35.3	9.48557	0.1783	+3.48	5.45	2 23 20.5
4	10 17 24.21	17 13.16	12 27 27.8	28 25.0	9.48611	0.2001	−2.39	5.41	3 23 23.9
5	10 24 45.00	24 35.02	11 48 33.9	49 27.9	9.48545	0.2187	3.47	5.36	4 23 27.3
6	10 32 4.58	31 55.68	11 8 5.8	8 56.0	9.48376	0.2346	3.72	5.30	5 23 30.7
7	10 39 22.01	39 14.17	10 26 14.8	27 0.7	9.48121	0.2480	3.85	5.24	6 23 34.1
8	10 46 36.50	46 29.70	9 43 11.8	43 52.9	9.47793	0.2592	3.93	5.17	7 23 37.4
9	10 53 47.44	53 41.67	8 59 7.1	59 43.9	9.47411	0.2685	3.99	5.10	8 23 40.6
10	11 0 54.38	0 49.61	8 14 10.2	14 40.7	9.46984	0.2762	4.02	5.02	9 23 43.8
11	11 7 56.98	7 53.17	7 28 30.2	28 55.2	9.46524	0.2823	4.04	4.92	10 23 46.9
12	11 14 55.01	14 52.12	6 42 15.4	42 34.8	9.46042	0.2872	4.05	4.82	11 23 50.0
13	11 21 48.34	21 46.32	5 55 33.3	55 47.1	9.45543	0.2909	4.06	4.69	12 23 52.9
14	11 28 36.91	28 35.72	5 8 30.7	8 39.0	9.45037	0.2935	4.06	4.54	13 23 55.8
15	11 35 20.73	35 20.33	4 21 13.6	21 16.4	9.44529	0.2953	4.05	4.33	14 23 58.6
16	11 41 59.86	42 0.21	3 33 47.7	33 45.1	9.44023	0.2963	4.04	−3.95	16 0 1.3
17	11 48 34.40	48 35.46	2 46 18.1	46 10.3	9.43524	0.2965	4.03	+3.29	17 0 3.9
18	11 55 4.48	55 6.22	1 58 49.3	58 36.5	9.43035	0.2961	4.02	4.06	18 0 6.5
19	12 1 30.25	1 32.64	1 11 25.3	11 7.6	9.42560	0.2950	4.00	4.31	19 0 9.0
20	12 7 51.88	7 54.89	+ 0 24 9.8	23 47.4	9.42100	0.2934	3.98	4.45	20 0 11.4
21	12 14 9.56	14 13.16	− 0 22 53.9	23 20.8	9.41656	0.2914	3.96	4.55	21 0 13.8
22	12 20 23.49	20 27.64	1 9 42.8	10 14.0	9.41232	0.2889	3.93	4.62	22 0 16.1
23	12 26 33.86	26 38.54	1 56 14.3	56 49.6	9.40827	0.2860	3.91	4.68	23 0 18.3
24	12 32 40.87	32 46.06	2 42 25.8	43 5.0	9.40440	0.2827	3.88	4.73	24 0 20.5
25	12 38 44.71	38 50.40	3 28 15.0	28 58.0	9.40073	0.2790	3.86	4.77	25 0 22.6
26	12 44 45.58	44 51.74	4 13 39.9	14 26.4	9.39727	0.2750	3.83	4.80	26 0 24.7
27	12 50 43.66	50 50.27	4 58 38.6	59 28.4	9.39399	0.2706	3.80	4.83	27 0 26.7
28	12 56 39.12	56 46.17	5 43 9.3	44 2.2	9.39090	0.2659	3.77	4.85	28 0 28.7
29	13 2 32.14	2 39.62	6 27 10.4	28 6.2	9.38800	0.2609	3.74	4.88	29 0 30.6
30	13 8 22.89	8 30.79	7 10 40.3	11 38.8	9.38529	0.2556	3.71	4.90	30 0 32.5
Oct. 1	13 14 11.53	14 19.84	7 53 37.5	54 38.6	9.38276	0.2500	3.67	4.92	1 0 34.4
2	13 19 58.21	20 6.91	8 36 0.6	37 4.1	9.38039	0.2440	3.64	4.93	2 0 36.2
3	13 25 43.06	25 52.15	9 17 48.3	18 54.0	9.37817	0.2377	3.61	4.95	3 0 38.0
4	13 31 26.21	31 35.68	9 58 59.2	60 7.0	9.37608	0.2312	3.58	4.96	4 0 39.8
5	13 37 7.77	37 17.61	10 39 32.0	40 41.7	9.37413	0.2243	3.56	4.98	5 0 41.6
6	13 42 47.84	42 58.04	11 19 25.5	20 36.9	9.37230	0.2170	3.53	4.99	6 0 43.3
7	13 48 26.51	48 37.07	11 58 38.4	59 51.3	9.37056	0.2094	3.50	5.00	7 0 45.0
8	13 54 3.86	54 14.77	12 37 9.5	38 23.7	9.36890	0.2014	3.48	5.02	8 0 46.7
9	13 59 39.95	59 51.21	13 14 57.4	16 12.8	9.36730	0.1930	3.47	5.03	9 0 48.3
10	14 5 14.82	5 26.42	13 52 0.8	53 17.2	9.36575	0.1842	3.46	5.04	10 0 50.0
11	14 10 48.50	11 0.43	14 28 18.4	29 35.6	9.36419	0.1749	3.46	5.06	11 0 51.6
12	14 16 20.99	16 33.24	15 3 48.8	5 6.6	9.36263	0.1652	3.46	5.07	12 0 53.2
13	14 21 52.28	22 4.85	15 38 30.7	39 48.9	9.36105	0.1549	3.48	5.08	13 0 54.8
14	14 27 22.33	27 35.22	16 12 22.8	13 41.2	9.35938	0.1441	3.50	5.09	14 0 56.3
15	14 32 51.08	33 4.27	16 45 23.5	46 42.0	9.35761	0.1327	3.53	5.11	15 0 57.9
16	14 38 18.43	38 31.90	17 17 31.2	18 49.6	9.35568	0.1206	3.56	5.12	16 0 59.4
17	14 43 44.27	43 58.00	17 48 44.3	50 2.3	9.35356	0.1077	3.60	5.13	17 1 0.9
18	14 49 8.43	49 22.42	18 19 1.2	20 18.5	9.35119	0.0940	3.65	5.15	18 1 2.3
19	14 54 30.72	54 44.95	18 48 20.1	49 36.5	9.34851	0.0795	3.71	5.16	19 1 3.8
20	14 59 50.90	60 5.34	19 16 30.1	17 54.4	9.34547	0.0639	3.76	5.17	20 1 5.2
21	15 5 8.68	5 23.30	19 43 56.2	45 10.2	9.34197	0.0472	3.82	5.19	21 1 6.5
22	15 10 23.72	10 38.49	20 10 9.4	11 21.8	9.33792	0.0253	3.88	5.20	22 1 7.8
23	15 15 35.61	15 50.50	20 35 16.5	36 27.1	9.33323	0.0009	3.94	5.22	23 1 9.1
24	15 20 43.88	20 58.83	20 59 15.2	60 23.6	9.32777	9.9889	4.00	5.23	24 1 10.3
25	15 25 47.98	26 2.93	21 22 2.9	23 8.8	9.32137	9.9659	4.06	5.25	25 1 11.4
26	15 30 47.28	31 2.18	21 43 37.0	44 40.1	9.31391	9.9408	4.13	5.26	26 1 12.4
27	15 35 41.05	35 55.85	22 3 54.8	4 54.8	9.30514	9.9130	4.19	5.28	27 1 13.4
28	15 40 28.45	40 43.08	22 22 53.2	23 49.7	9.29482	9.8821	4.25	5.30	28 1 14.3
29	15 45 8.53	45 22.89	22 40 28.9	41 21.5	9.28264	9.8473	4.31	5.32	29 1 15.0
30	15 49 40.19	49 54.18	22 56 38.3	57 26.7	9.26823	9.8078	4.37	5.34	30 1 15.5
31	15 54 2.19	54 15.71	23 11 17.7	12 1.5	9.25112	9.7623	4.42	5.36	31 1 15.9
32	15 58 13.15	58 26.08	−23 24 23.0	25 1.8	+9.23068	−9.7090	−4.48	+5.38	32 1 16.2

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1	15 58 13.15	58 26.08	−23 24 23.0	25 1.8	+9.23068	−9.7090	−4.48	+5.38	1 1 16.2
2	16 2 11.49	2 23.71	23 35 49.8	36 23.2	9.20610	9.6450	4.54	5.40	2 1 16.2
3	16 5 55.43	6 6.81	23 45 32.9	46 0.6	9.17629	9.5655	4.60	5.42	3 1 15.9
4	16 9 23.00	9 33.39	23 53 26.8	53 48.5	9.13977	9.4622	4.65	5.44	4 1 15.4
5	16 12 32.01	12 41.26	23 59 25.4	59 40.7	9.09437	9.3170	4.70	5.47	5 1 14.6
6	16 15 20.05	15 28.02	24 3 22.0	3 30.6	9.03668	9.0802	4.76	5.49	6 1 13.5
7	16 17 44.49	17 51.05	24 5 9.1	5 10.8	8.96132	−8.4393	4.80	5.52	7 1 12.0
8	16 19 42.54	19 47.56	24 4 38.3	4 33.1	8.85821	+8.8532	4.85	5.55	8 1 10.0
9	16 21 11.26	21 14.64	24 1 40.5	1 28.4	8.70532	9.2475	4.89	5.58	9 1 7.5
10	16 22 7.64	22 9.35	23 56 5.8	55 47.0	8.43504	9.4613	4.93	5.61	10 1 4.4
11	16 22 28.71	22 28.78	23 47 43.6	47 18.5	+7.23434	9.6123	4.96	5.63	11 1 0.8
12	16 22 11.70	22 10.22	23 36 22.9	35 52.4	−8.40843	9.7302	4.99	5.66	12 0 56.6
13	16 21 14.26	21 11.42	23 21 53.3	21 18.5	8.73529	9.8272	5.01	5.68	13 0 51.7
14	16 19 34.74	19 30.85	23 4 5.7	3 28.2	8.92396	9.9085	5.01	5.69	14 0 46.1
15	16 17 12.50	17 7.97	22 42 53.6	42 15.5	9.05516	9.9801	5.01	5.70	15 0 39.8
16	16 14 8.25	14 3.58	22 18 15.2	17 39.1	9.15259	0.0405	4.98	5.69	16 0 32.8
17	16 10 24.38	10 20.14	21 50 15.8	49 44.8	9.22615	0.0911	4.93	5.66	17 0 25.1
18	16 6 5.25	6 2.02	21 19 9.9	18 47.0	9.28070	0.1320	4.84	5.59	18 0 16.9
19	16 1 17.19	1 15.48	20 45 23.3	45 11.4	9.31866	0.1628	4.70	5.47	19 0 8.2
20	15 56 8.43	56 8.61	20 9 34.5	9 35.8	9.34126	0.1828	4.42	5.24	19 23 59.2
21	15 50 48.74	50 50.98	19 32 34.1	32 49.7	9.34900	0.1912	−2.80	+4.47	20 23 50.0
22	15 45 28.79	45 33.02	18 55 22.0	55 51.6	9.34196	0.1872	+4.41	−5.11	21 23 40.8
23	15 40 19.34	40 25.25	18 19 3.7	19 45.6	9.31983	0.1698	4.70	5.46	22 23 31.7
24	15 35 30.48	35 37.57	17 44 44.7	45 35.7	9.28178	0.1380	4.85	5.64	23 23 23.0
25	15 31 10.92	31 18.56	17 13 24.6	14 20.4	9.22628	0.0904	4.94	5.74	24 23 14.8
26	15 27 27.50	27 35.01	16 45 52.6	46 48.8	9.15033	0.0248	5.00	5.81	25 23 7.1
27	15 24 25.03	24 31.77	16 22 44.9	23 37.0	9.04822	9.9376	5.02	5.84	26 23 0.1
28	15 22 6.26	22 11.66	16 4 23.1	5 7.3	8.90793	9.8218	5.03	5.85	27 22 53.9
29	15 20 32.10	20 35.73	15 50 55.1	51 28.4	8.69861	9.6622	5.03	5.85	28 22 48.4
30	15 19 42.00	19 43.58	15 42 17.2	42 37.6	−8.29709	9.4176	5.01	5.83	29 22 43.5
Dec. 1	15 19 34.31	19 33.67	15 38 16.4	38 22.9	+7.94749	+8.8767	4.98	5.79	0 22 39.4
2	15 20 6.59	20 3.67	15 38 33.1	38 25.5	8.55176	−8.9803	4.95	5.75	1 22 36.0
3	15 21 15.93	21 10.76	15 42 43.5	42 22.3	8.78031	9.3964	4.91	5.70	2 22 33.2
4	15 22 59.21	22 51.90	15 50 21.9	49 48.0	8.91795	9.5848	4.87	5.64	3 22 30.9
5	15 25 13.30	25 4.00	16 1 2.0	0 16.8	9.01325	9.7003	4.83	5.58	4 22 29.2
6	15 27 55.14	27 44.03	16 14 18.0	13 22.9	9.08403	9.7790	4.78	5.50	5 22 27.9
7	15 31 1.86	30 49.12	16 29 45.5	28 42.1	9.13885	9.8353	4.73	5.42	6 22 27.1
8	15 34 30.80	34 16.62	16 47 1.9	45 51.8	9.18254	9.8766	4.68	5.33	7 22 26.6
9	15 38 19.56	38 4.13	17 5 46.4	4 31.1	9.21809	9.9069	4.63	5.22	8 22 26.5
10	15 42 25.98	42 9.49	17 25 40.2	24 21.0	9.24748	9.9290	4.58	5.10	9 22 26.6
11	15 46 48.14	46 30.77	17 46 26.6	45 4.8	9.27213	9.9446	4.53	4.96	10 22 27.0
12	15 51 24.35	51 6.25	18 7 50.6	6 27.4	9.29299	9.9550	4.48	4.77	11 22 27.6
13	15 56 13.11	55 54.41	18 29 39.0	28 15.4	9.31084	9.9611	4.43	4.49	12 22 28.5
14	16 1 13.11	0 53.95	18 51 40.1	50 16.9	9.32627	9.9635	4.39	−3.74	13 22 29.6
15	16 6 23.22	6 3.73	19 13 43.5	12 21.5	9.33970	9.9627	4.34	+4.23	14 22 30.8
16	16 11 42.44	11 22.72	19 35 40.1	34 20.1	9.35148	9.9591	4.30	4.55	15 22 32.1
17	16 17 9.91	16 50.05	19 57 22.0	56 4.5	9.36190	9.9529	4.26	4.72	16 22 33.6
18	16 22 44.87	22 24.96	20 18 42.0	17 27.4	9.37116	9.9444	4.22	4.83	17 22 35.3
19	16 28 26.66	28 6.79	20 39 33.8	38 22.5	9.37946	9.9336	4.18	4.91	18 22 37.0
20	16 34 14.70	33 54.94	20 59 51.9	58 44.2	9.38693	9.9206	4.14	4.97	19 22 38.9
21	16 40 8.48	39 48.89	21 19 31.3	18 27.5	9.39370	9.9055	4.11	5.02	20 22 40.8
22	16 46 7.56	45 48.20	21 38 27.5	37 27.8	9.39986	9.8882	4.07	5.06	21 22 42.9
23	16 52 11.54	51 52.47	21 56 36.6	55 41.1	9.40549	9.8687	4.04	5.09	22 22 45.0
24	16 58 20.08	58 1.34	22 13 55.0	13 3.8	9.41066	9.8468	4.01	5.11	23 22 47.2
25	17 4 32.86	4 14.50	22 30 19.5	29 32.6	9.41544	9.8223	3.98	5.14	24 22 49.5
26	17 10 49.61	10 31.68	22 45 47.1	45 4.5	9.41988	9.7951	3.95	5.16	25 22 51.8
27	17 17 10.08	16 52.62	22 60 15.2	59 36.8	9.42399	9.7647	3.93	5.17	26 22 54.2
28	17 23 34.04	23 17.08	23 13 41.4	13 7.2	9.42781	9.7306	3.90	5.19	27 22 56.7
29	17 30 1.20	29 44.86	23 26 3.4	25 33.3	9.43140	9.6923	3.87	5.21	28 22 59.2
30	17 36 31.64	36 15.78	23 37 19.0	36 52.9	9.43475	9.6490	3.85	5.22	29 23 1.8
31	17 43 4.91	42 49.66	23 47 26.3	47 4.1	9.43789	9.5995	3.83	5.23	30 23 4.4
32	17 49 40.95	49 26.33	−23 56 23.6	56 5.1	+9.44085	−9.5421	+3.80	+5.24	31 23 7.0

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Jan. 1	16 43 56.40	43 55.69	−17 37 24.2	37 51.2	+7.83639	+9.3518	+4.37	−5.08	0 22 0.8
2	16 44 11.07	44 9.43	17 32 25.3	32 49.0	8.13390	9.2780	4.35	5.06	1 21 57.1
3	16 44 35.35	44 32.82	17 28 16.0	28 35.9	8.30538	9.1925	4.33	5.04	2 21 53.5
4	16 45 8.99	45 5.56	17 24 54.4	25 10.6	8.42507	9.0916	4.32	5.02	3 21 50.1
5	16 45 51.74	45 47.41	17 22 18.3	22 30.8	8.51659	8.9671	4.32	5.00	4 21 46.9
6	16 46 43.36	46 38.10	17 20 25.6	20 34.4	8.59022	8.8007	4.31	4.99	5 21 43.8
7	16 47 43.60	47 37.40	17 19 14.6	19 19.6	8.65147	8.5389	4.30	4.95	6 21 40.8
8	16 48 52.23	48 45.10	17 18 43.6	18 44.8	8.70419	+7.8751	4.28	4.93	7 21 38.1
9	16 50 9.05	50 0.97	17 18 50.3	18 47.9	8.74953	−8.2499	4.27	4.89	8 21 35.4
10	16 51 33.78	51 24.76	17 19 32.1	19 26.2	8.78961	8.6140	4.25	4.86	9 21 32.9
11	16 53 6.20	52 56.24	17 20 46.3	20 37.0	8.82504	8.8045	4.24	4.78	10 21 30.4
12	16 54 46.05	54 35.17	17 22 30.7	22 18.3	8.85692	8.9190	4.22	4.80	11 21 28.2
13	16 56 33.11	56 21.32	17 24 43.3	24 27.8	8.88567	9.0087	4.20	4.75	12 21 26.1
14	16 58 27.15	58 14.46	17 27 22.1	27 3.6	8.91168	9.0769	4.20	4.71	13 21 24.0
15	17 0 27.90	0 14.33	17 30 24.7	30 3.5	8.93548	9.1306	4.18	4.66	14 21 22.0
16	17 2 35.18	2 20.73	17 33 48.8	33 25.0	8.95738	9.1737	4.17	4.61	15 21 20.1
17	17 4 48.78	4 33.46	17 37 32.1	37 6.0	8.97760	9.2088	4.15	4.56	16 21 18.3
18	17 7 8.50	6 52.35	17 41 32.5	41 4.3	8.99628	9.2377	4.15	4.50	17 21 16.8
19	17 9 34.15	9 17.19	17 45 47.9	45 17.9	9.01372	9.2614	4.13	4.41	18 21 15.3
20	17 12 5.56	11 47.80	17 50 16.3	49 44.7	9.03003	9.2808	4.11	4.34	19 21 13.9
21	17 14 42.55	14 24.00	17 54 55.7	54 22.6	9.04516	9.2963	4.09	4.25	20 21 12.5
22	17 17 24.91	17 5.61	17 59 44.2	59 9.9	9.05920	9.3086	4.08	4.08	21 21 11.3
23	17 20 12.44	19 52.41	18 4 30.8	4 4.5	9.07237	9.3173	4.07	3.88	22 21 10.2
24	17 23 4.97	22 44.23	18 9 40.5	9 4.5	9.08480	9.3235	4.05	−3.64	23 21 9.1
25	17 26 2.35	25 40.91	18 14 44.6	14 8.1	9.09643	9.3272	4.03	+2.68	24 21 8.1
26	17 29 4.39	28 42.29	18 19 50.4	19 13.6	9.10733	9.3279	4.02	3.59	25 21 7.1
27	17 32 10.92	31 48.19	18 24 56.0	24 19.2	9.11746	9.3265	4.00	3.86	26 21 6.3
28	17 35 21.78	34 58.43	18 29 59.9	29 23.3	9.12722	9.3235	3.99	4.01	27 21 5.6
29	17 38 36.81	38 12.87	18 35 0.8	34 24.4	9.13641	9.3180	3.97	4.19	28 21 4.9
30	17 41 55.88	41 31.36	18 39 57.0	39 21.0	9.14501	9.3093	3.95	4.26	29 21 4.2
31	17 45 18.82	44 53.75	18 44 46.6	44 11.4	9.15312	9.2985	3.94	4.35	30 21 3.6
Feb. 1	17 48 45.48	48 19.89	18 49 28.3	48 54.0	9.16077	9.2852	3.92	4.35	31 21 3.1
2	17 52 15.72	51 49.63	18 54 0.8	53 27.7	9.16818	9.2696	3.90	4.44	1 21 2.6
3	17 55 49.42	55 22.86	18 58 22.9	57 51.1	9.17509	9.2516	3.88	4.50	2 21 2.3
4	17 59 26.44	58 59.43	19 2 33.4	2 3.1	9.18139	9.2299	3.87	4.53	3 21 2.0
5	18 3 6.61	2 39.19	19 6 30.8	6 2.1	9.18750	9.2047	3.85	4.56	4 21 1.7
6	18 6 49.83	6 22.00	19 10 13.9	9 47.0	9.19332	9.1759	3.84	4.58	5 21 1.5
7	18 10 35.99	10 7.76	19 13 41.7	13 16.8	9.19889	9.1431	3.82	4.62	6 21 1.3
8	18 14 24.99	13 56.38	19 16 53.2	16 30.4	9.20414	9.1046	3.81	4.64	7 21 1.2
9	18 18 16.71	17 47.76	19 19 47.3	19 26.7	9.20915	9.0604	3.78	4.66	8 21 1.0
10	18 22 11.05	21 41.78	19 22 23.1	22 4.8	9.21393	9.0075	3.76	4.68	9 21 1.0
11	18 26 7.90	25 38.33	19 24 39.5	24 23.6	9.21838	8.9444	3.75	4.71	10 21 1.0
12	18 30 7.17	29 37.30	19 26 35.6	26 22.3	9.22276	8.8661	3.72	4.72	11 21 1.0
13	18 34 8.76	33 38.63	19 28 10.4	27 59.8	9.22682	8.7664	3.70	4.73	12 21 1.1
14	18 38 12.58	37 42.19	19 29 23.2	29 15.3	9.23063	8.6326	3.69	4.75	13 21 1.2
15	18 42 18.59	41 47.88	19 30 13.3	30 8.3	9.23432	8.4294	3.67	4.76	14 21 1.3
16	18 46 26.46	45 55.61	19 30 39.9	30 37.9	9.23777	−8.0119	3.65	4.78	15 21 1.5
17	18 50 36.36	50 5.30	19 30 42.3	30 43.3	9.24112	+7.8284	3.63	4.78	16 21 1.7
18	18 54 48.14	54 16.89	19 30 19.9	30 24.0	9.24428	8.3857	3.60	4.79	17 21 2.0
19	18 59 1.70	58 30.31	19 29 32.0	29 30.3	9.24724	8.6234	3.58	4.80	18 21 2.3
20	19 3 16.95	2 45.43	19 28 18.2	28 28.7	9.25003	8.7812	3.56	4.81	19 21 2.6
21	19 7 33.80	7 2.14	19 26 37.8	26 51.6	9.25270	8.8966	3.54	4.82	20 21 3.0
22	19 11 52.18	11 20.39	19 24 30.4	24 47.6	9.25517	8.9933	3.52	4.83	21 21 3.3
23	19 16 11.99	15 40.10	19 21 55.2	22 15.8	9.25750	9.0700	3.49	4.83	22 21 3.7
24	19 20 33.15	20 1.17	19 18 51.8	19 15.8	9.25968	9.1357	3.45	4.84	23 21 4.1
25	19 24 55.57	24 23.58	19 15 20.6	15 47.8	9.26166	9.1948	3.42	4.84	24 21 4.5
26	19 29 19.16	28 47.05	19 11 20.6	11 51.4	9.26354	9.2478	3.39	4.84	25 21 4.9
27	19 33 43.85	33 11.70	19 6 51.5	7 25.9	9.26530	9.2939	3.36	4.84	26 21 5.4
28	19 38 9.57	37 37.38	19 1 53.5	2 31.1	9.26693	9.3368	3.31	4.84	27 21 5.9
29	19 42 36.24	42 4.03	18 56 26.1	57 7.1	9.26836	9.3755	3.28	4.86	28 21 6.4
30	19 47 3.76	46 31.55	18 50 29.2	51 13.7	9.26969	9.4123	3.22	4.85	29 21 6.9
31	19 51 32.06	50 59.86	−18 44 2.3	44 50.3	+9.27089	+9.4459	+3.18	+4.85	30 21 7.4

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1	19 42 36.24	42 4.03	−18 56 26.1	57 7.1	+9.26836	+9.3755	+3.28	+4.86	0 21 6.4
2	19 47 3.76	46 31.55	18 50 29.2	51 13.7	9.26969	9.4123	3.22	4.85	1 21 6.9
3	19 51 32.06	50 59.86	18 44 2.3	44 50.3	9.27089	9.4459	3.18	4.85	2 21 7.4
4	19 56 1.06	55 28.89	18 37 5.7	37 57.0	9.27196	9.4765	3.13	4.86	3 21 8.0
5	20 0 30.69	59 58.56	18 29 39.3	30 34.0	9.27294	9.5058	3.06	4.86	4 21 8.6
6	20 5 0.89	4 28.81	18 21 42.8	22 40.9	9.27379	9.5333	3.03	4.85	5 21 9.2
7	20 9 31.60	8 59.59	18 13 16.3	14 17.7	9.27455	9.5589	2.96	4.85	6 21 9.9
8	20 14 2.75	13 30.81	18 4 19.9	5 24.6	9.27522	9.5830	2.86	4.85	7 21 10.5
9	20 18 34.28	18 2.42	17 54 53.7	56 1.6	9.27573	9.6060	2.83	4.85	8 21 11.2
10	20 23 6.12	22 34.35	17 44 57.6	46 8.8	9.27624	9.6277	2.68	4.85	9 21 11.8
11	20 27 38.24	27 6.55	17 34 31.8	35 46.2	9.27661	9.6484	2.59	4.85	10 21 12.4
12	20 32 10.57	31 38.95	17 23 36.3	24 53.8	9.27691	9.6679	2.46	4.85	11 21 13.0
13	20 36 43.07	36 11.54	17 12 11.4	13 32.1	9.27728	9.6866	2.29	4.84	12 21 13.6
14	20 41 15.70	40 44.29	17 0 17.2	1 40.9	9.27733	9.7043	2.16	4.84	13 21 14.2
15	20 45 48.41	45 17.12	16 47 53.9	49 20.7	9.27738	9.7213	+1.38	4.83	14 21 14.8
16	20 50 21.15	49 49.97	16 35 1.8	36 31.5	9.27742	9.7372	−1.68	4.84	15 21 15.4
17	20 54 53.90	54 22.84	16 21 41.2	23 13.8	9.27742	9.7529	2.16	4.82	16 21 16.0
18	20 59 26.63	58 55.69	16 7 52.0	9 27.5	9.27733	9.7678	2.29	4.82	17 21 16.6
19	21 3 59.29	3 28.47	15 53 34.6	55 12.9	9.27721	9.7819	2.46	4.81	18 21 17.2
20	21 8 31.86	8 1.16	15 38 49.5	40 30.5	9.27702	9.7955	2.46	4.81	19 21 17.8
21	21 13 4.31	12 33.74	15 23 36.9	25 20.7	9.27686	9.8084	2.64	4.81	20 21 18.4
22	21 17 36.63	17 6.19	15 7 57.2	9 43.6	9.27658	9.8210	2.68	4.80	21 21 19.0
23	21 22 8.76	21 38.46	14 51 50.7	53 39.6	9.27626	9.8327	2.72	4.80	22 21 19.6
24	21 26 40.68	26 10.52	14 35 18.1	37 9.4	9.27591	9.8442	2.76	4.79	23 21 20.2
25	21 31 12.37	30 42.34	14 18 19.4	20 13.3	9.27554	9.8553	2.83	4.78	24 21 20.8
26	21 35 43.81	35 13.91	14 0 55.0	2 51.4	9.27511	9.8658	2.86	4.77	25 21 21.3
27	21 40 14.97	39 45.21	13 43 5.6	45 4.4	9.27461	9.8758	2.86	4.76	26 21 21.9
28	21 44 45.82	44 16.19	13 24 51.8	26 52.8	9.27413	9.8855	2.89	4.74	27 21 22.4
29	21 49 16.36	48 46.86	13 6 14.1	8 17.3	9.27365	9.8947	2.93	4.74	28 21 22.9
30	21 53 46.58	53 17.21	12 47 12.7	49 18.1	9.27304	9.9035	2.91	4.73	29 21 23.3
31	21 58 16.43	57 47.18	12 27 48.2	29 55.7	9.27247	9.9121	2.89	4.72	30 21 23.8
Apr. 1	22 2 45.94	2 16.83	12 8 1.0	10 10.5	9.27188	9.9203	2.93	4.71	0 21 24.3
2	22 7 15.06	6 46.09	11 47 51.7	50 3.1	9.27133	9.9281	2.99	4.70	1 21 24.9
3	22 11 43.82	11 14.99	11 27 20.9	29 34.1	9.27067	9.9356	2.96	4.69	2 21 25.4
4	22 16 12.18	15 43.50	11 6 29.3	8 44.1	9.27005	9.9427	2.99	4.68	3 21 26.0
5	22 20 40.15	20 11.61	10 45 17.4	47 33.9	9.26939	9.9496	2.99	4.66	4 21 26.5
6	22 25 7.71	24 39.30	10 23 45.6	26 3.8	9.26872	9.9562	2.96	4.65	5 21 27.0
7	22 29 34.87	29 6.60	10 1 54.5	4 14.3	9.26809	9.9624	2.96	4.64	6 21 27.5
8	22 34 1.64	33 33.50	9 39 44.8	42 6.0	9.26747	9.9684	2.96	4.62	7 21 28.0
9	22 38 28.03	38 0.02	9 17 17.1	19 39.7	9.26683	9.9742	2.93	4.61	8 21 28.5
10	22 42 54.04	42 26.16	8 54 31.8	56 55.8	9.26624	9.9796	2.93	4.60	9 21 29.0
11	22 47 19.69	46 51.93	8 31 29.5	33 54.9	9.26562	9.9850	2.91	4.58	10 21 29.4
12	22 51 44.97	51 17.34	8 8 10.7	10 37.3	9.26503	9.9899	2.89	4.56	11 21 29.9
13	22 56 9.90	55 42.39	7 44 36.2	47 3.9	9.26449	9.9946	2.89	4.54	12 21 30.4
14	23 0 34.50	0 7.12	7 20 46.7	23 15.4	9.26393	9.9990	2.86	4.53	13 21 30.9
15	23 4 58.77	4 31.50	6 56 42.8	59 12.4	9.26339	0.0035	2.81	4.50	14 21 31.3
16	23 9 22.73	8 55.57	6 32 24.5	34 55.2	9.26300	0.0076	2.81	4.48	15 21 31.8
17	23 13 46.45	13 19.41	6 7 52.9	10 24.4	9.26257	0.0113	2.81	4.47	16 21 32.3
18	23 18 9.91	17 42.98	5 43 8.6	45 40.9	9.26209	0.0150	2.68	4.46	17 21 32.7
19	23 22 33.11	22 6.26	5 18 12.1	20 45.2	9.26174	0.0185	2.64	4.44	18 21 33.1
20	23 26 56.11	26 29.37	4 53 3.9	55 37.8	9.26141	0.0217	2.59	4.41	19 21 33.6
21	23 31 18.92	30 52.28	4 27 44.8	30 19.4	9.26113	0.0249	2.53	4.36	20 21 34.0
22	23 35 41.57	35 15.04	4 2 15.2	4 50.7	9.26087	0.0276	2.46	4.33	21 21 34.5
23	23 40 4.07	39 37.63	3 36 36.1	39 11.9	9.26064	0.0303	2.34	4.31	22 21 34.9
24	23 44 26.45	44 0.10	3 10 47.9	13 23.9	9.26050	0.0327	2.42	4.29	23 21 35.3
25	23 48 48.74	48 22.46	2 44 51.2	47 27.5	9.26029	0.0351	1.86	4.22	24 21 35.7
26	23 53 10.94	52 44.76	2 18 46.5	21 23.1	9.26026	0.0372	1.99	4.19	25 21 36.2
27	23 57 33.11	57 7.00	1 52 34.7	55 11.6	9.26017	0.0390	−1.68	4.16	26 21 [illegible]
28	0 1 55.24	1 29.23	1 26 16.5	28 53.5	9.26011	0.0407	+1.68	4.06	27 21 [illegible]
29	0 6 17.35	5 51.41	0 59 52.5	62 29.6	9.26014	0.0422	1.99	4.03	28 21 37.5
30	0 10 39.49	10 13.62	0 33 23.3	36 0.4	9.26019	0.0435	2.16	3.99	29 21 37.9
31	0 15 1.67	14 35.87	− 0 6 49.6	9 26.7	+9.26026	+0.0447	+2.38	+3.86	30 21 38.3

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
May 1	0 15 1.67	14 35.87	− 0 6 49.6	9 26.7	+9.26026	+0.0447	+2.38	+3.86	0 21 38.3
2	0 19 23.92	18 58.19	+ 0 19 48.0	17 11.1	9.26044	0.0456	2.46	3.78	1 21 38.8
3	0 23 46.27	23 20.61	0 46 28.8	43 52.1	9.26059	0.0465	2.59	3.64	2 21 39.2
4	0 28 8.74	27 43.16	1 13 12.3	10 35.8	9.26084	0.0470	2.64	3.47	3 21 39.7
5	0 32 31.37	32 5.85	1 39 57.6	37 21.5	9.26113	0.0474	2.66	+3.16	4 21 40.1
6	0 36 54.18	36 28.72	2 6 44.1	4 8.5	9.26138	0.0477	2.81	0.00	5 21 40.6
7	0 41 17.18	40 51.78	2 33 31.2	30 56.4	9.26181	0.0477	2.83	−3.08	6 21 41.0
8	0 45 40.45	45 15.10	3 0 18.3	57 43.6	9.26226	0.0477	2.86	3.46	7 21 41.4
9	0 50 4.00	49 38.70	3 27 5.0	24 30.8	9.26277	0.0476	2.83	3.75	8 21 41.8
10	0 54 27.85	54 2.61	3 53 50.4	51 16.9	9.26318	0.0470	2.93	3.86	9 21 42.3
11	0 58 51.99	58 26.81	4 20 33.4	18 0.8	9.26372	0.0462	3.01	3.90	10 21 42.7
12	1 3 16.49	2 51.34	4 47 13.4	44 41.6	9.26439	0.0453	3.03	3.94	11 21 43.2
13	1 7 41.41	7 16.31	5 13 50.0	11 19.1	9.26513	0.0445	3.04	4.03	12 21 43.7
14	1 12 6.79	11 41.74	5 40 22.9	37 52.9	9.26587	0.0433	3.06	4.10	13 21 44.2
15	1 16 32.64	16 7.64	6 6 51.2	4 22.2	9.26668	0.0420	3.08	4.16	14 21 44.7
16	1 20 59.00	20 34.04	6 33 14.3	30 46.4	9.26747	0.0404	3.14	4.19	15 21 45.2
17	1 25 25.87	25 0.95	6 59 31.3	57 4.5	9.26843	0.0386	3.14	4.22	16 21 45.7
18	1 29 53.33	29 28.45	7 25 41.6	23 16.0	9.26934	0.0367	3.19	4.26	17 21 46.2
19	1 34 21.38	33 56.54	7 51 44.8	49 20.4	9.27036	0.0347	3.21	4.33	18 21 46.7
20	1 38 50.08	38 25.27	8 17 40.1	15 17.0	9.27146	0.0323	3.21	4.35	19 21 47.2
21	1 43 19.46	42 54.68	8 43 26.6	41 4.9	9.27252	0.0298	3.23	4.38	20 21 47.7
22	1 47 49.52	47 24.79	9 9 3.8	6 43.6	9.27366	0.0271	3.26	4.41	21 21 48.3
23	1 52 20.31	51 55.62	9 34 31.0	32 12.4	9.27487	0.0241	3.28	4.45	22 21 48.9
24	1 56 51.86	56 27.21	9 59 47.4	57 30.5	9.27613	0.0210	3.29	4.46	23 21 49.5
25	2 1 24.21	0 59.61	10 24 52.6	22 37.4	9.27739	0.0176	3.31	4.48	24 21 50.1
26	2 5 57.37	5 32.81	10 49 45.8	47 32.3	9.27872	0.0141	3.32	4.51	25 21 50.7
27	2 10 31.38	10 6.85	11 14 26.4	12 14.5	9.28007	0.0102	3.33	4.53	26 21 51.3
28	2 15 6.25	14 41.76	11 38 53.4	36 43.4	9.28145	0.0060	3.34	4.55	27 21 51.9
29	2 19 42.00	19 17.54	12 3 6.1	0 58.1	9.28286	0.0017	3.35	4.57	28 21 52.5
30	2 24 18.66	23 54.26	12 27 3.9	24 57.8	9.28431	9.9971	3.36	4.59	29 21 53.2
31	2 28 56.25	28 31.90	12 50 46.2	48 42.2	9.28578	9.9923	3.36	4.61	30 21 53.9
June 1	2 33 34.78	33 10.48	13 14 12.3	12 10.5	9.28721	9.9871	3.37	4.63	0 21 54.6
2	2 38 14.25	37 50.03	13 37 21.3	35 21.7	9.28872	9.9817	3.38	4.64	1 21 55.4
3	2 42 54.70	42 30.55	14 0 12.6	58 15.4	9.29025	9.9749	3.39	4.66	2 21 56.2
4	2 47 36.15	47 12.05	14 22 45.4	20 50.4	9.29183	9.9699	3.39	4.68	3 21 56.9
5	2 52 18.62	51 54.59	14 44 59.1	43 6.4	9.29338	9.9635	3.40	4.69	4 21 57.7
6	2 57 2.11	56 38.15	15 6 52.9	5 2.8	9.29497	9.9569	3.41	4.71	5 21 58.5
7	3 1 46.65	1 22.76	15 28 26.3	26 38.6	9.29658	9.9499	3.41	4.72	6 21 59.3
8	3 6 32.25	6 8.42	15 49 38.5	47 53.3	9.29822	9.9425	3.41	4.73	7 22 0.1
9	3 11 18.93	10 55.17	16 10 28.7	8 46.1	9.29984	9.9349	3.42	4.75	8 22 0.9
10	3 16 6.69	15 43.00	16 30 56.4	29 16.4	9.30150	9.9267	3.42	4.76	9 22 1.7
11	3 20 55.55	20 31.95	16 51 0.7	49 23.4	9.30317	9.9181	3.41	4.77	10 22 2.6
12	3 25 45.51	25 22.01	17 10 40.9	9 6.3	9.30477	9.9092	3.43	4.78	11 22 3.5
13	3 30 36.56	30 13.15	17 29 56.7	28 24.8	9.30644	9.8999	3.44	4.80	12 22 4.4
14	3 35 28.74	35 5.43	17 48 47.2	47 18.1	9.30817	9.8899	3.42	4.80	13 22 5.3
15	3 40 22.06	39 58.85	18 7 11.5	5 45.2	9.30980	9.8795	3.43	4.81	14 22 6.3
16	3 45 16.49	44 53.38	18 25 9.2	23 45.5	9.31148	9.8688	3.42	4.82	15 22 7.2
17	3 50 12.05	49 49.06	18 42 39.4	41 18.7	9.31311	9.8573	3.42	4.83	16 22 8.2
18	3 55 8.72	54 45.87	18 59 41.7	58 24.0	9.31470	9.8452	3.43	4.85	17 22 9.2
19	4 0 6.50	59 43.75	19 16 15.4	15 0.6	9.31637	9.8326	3.42	4.86	18 22 10.2
20	4 5 5.40	4 42.77	19 32 19.8	31 7.9	9.31799	9.8193	3.41	4.86	19 22 11.2
21	4 10 5.41	9 42.93	19 47 54.4	46 45.5	9.31957	9.8052	3.41	4.87	20 22 12.3
22	4 15 6.51	14 44.18	20 2 58.4	1 52.5	9.32116	9.7904	3.41	4.88	21 22 13.4
23	4 20 8.70	19 46.52	20 17 31.3	16 28.4	9.32272	9.7747	3.38	4.89	22 22 14.5
24	4 25 11.95	24 49.93	20 31 32.4	30 32.5	9.32417	9.7583	3.38	4.90	23 22 15.6
25	4 30 16.21	29 54.35	20 45 1.2	44 4.2	9.32560	9.7406	3.39	4.91	24 22 16.7
26	4 35 21.48	34 59.78	20 57 57.0	57 3.0	9.32711	9.7221	3.36	4.91	25 22 17.8
27	4 40 27.77	40 6.23	21 10 19.4	9 28.4	9.32845	9.7024	3.35	4.91	26 22 19.0
28	4 45 35.00	45 13.65	21 22 7.8	21 19.7	9.32978	9.6812	3.34	4.92	27 22 20.1
29	4 50 43.16	50 22.00	21 33 21.5	32 36.4	9.33111	9.6589	3.31	4.93	28 22 21.3
30	4 55 52.23	55 31.27	21 44 0.2	43 18.0	9.33230	9.6348	3.31	4.94	29 22 22.5
31	5 1 2.15	0 41.41	+21 54 3.3	53 24.1	+9.33353	+9.6090	+3.28	−4.95	30 22 23.8

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
July 1	5 1 2.15	0 41.41	+21 54 3.3	53 24.1	+9.33353	+9.6090	+3.28	−4.95	0 22 23.8
2	5 6 12.92	5 52.41	22 3 30.3	2 54.0	9.33467	9.5811	3.25	4.95	1 22 25.1
3	5 11 24.48	11 4.20	22 12 20.7	11 47.3	9.33574	9.5512	3.22	4.95	2 22 26.4
4	5 16 36.79	16 16.73	22 20 34.3	20 3.7	9.33674	9.5183	3.20	4.96	3 22 27.6
5	5 21 49.80	21 29.97	22 28 10.5	27 42.7	9.33770	9.4825	3.18	4.96	4 22 28.9
6	5 27 3.48	26 43.90	22 35 9.0	34 44.0	9.33860	9.4436	3.13	4.96	5 22 30.2
7	5 32 17.78	31 58.44	22 41 29.6	41 7.3	9.33940	9.3986	3.11	4.97	6 22 31.5
8	5 37 32.65	37 13.56	22 47 11.6	46 52.0	9.34018	9.3503	3.06	4.97	7 22 32.8
9	5 42 48.06	42 29.23	22 52 14.7	51 57.7	9.34090	9.2945	3.01	4.97	8 22 34.1
10	5 48 3.96	47 45.39	22 56 38.7	56 24.2	9.34151	9.2216	2.99	4.98	9 22 35.4
11	5 53 20.29	53 1.98	23 0 23.2	0 11.3	9.34211	9.1523	2.89	4.97	10 22 36.7
12	5 58 37.03	58 18.98	23 3 28.0	3 18.7	9.34262	9.0599	2.83	4.99	11 22 38.0
13	6 3 54.13	3 36.37	23 5 53.3	5 46.2	9.34307	8.9306	2.56	4.99	12 22 39.4
14	6 9 11.49	8 54.02	23 7 38.5	7 33.7	9.34345	8.7711	2.59	4.99	13 22 40.7
15	6 14 29.11	14 11.91	23 8 43.5	8 41.0	9.34366	8.4949	2.53	4.99	14 22 42.1
16	6 19 46.89	19 29.98	23 9 8.4	9 8.0	9.34389	+7.5318	2.38	4.99	15 22 43.4
17	6 25 4.84	24 48.20	23 8 53.0	8 54.7	9.34407	−8.3943	+1.99	4.99	16 22 44.8
18	6 30 22.83	30 6.51	23 7 57.0	8 0.8	9.34416	8.7263	−1.38	4.99	17 22 46.1
19	6 35 40.90	35 24.88	23 6 20.3	6 26.1	9.34419	8.9102	2.16	4.99	18 22 47.5
20	6 40 58.96	40 43.23	23 4 3.1	4 10.8	9.34415	9.0364	2.46	4.99	19 22 48.8
21	6 46 16.96	46 1.53	23 1 5.6	1 15.1	9.34400	9.1370	2.64	4.99	20 22 50.2
22	6 51 34.83	51 19.71	22 57 27.6	57 38.8	9.34377	9.2186	2.68	4.99	21 22 51.5
23	6 56 52.51	56 37.71	22 53 9.2	53 22.2	9.34355	9.2869	2.83	4.99	22 22 52.9
24	7 2 9.99	1 55.49	22 48 10.4	48 25.0	9.34318	9.3454	2.89	4.98	23 22 54.2
25	7 7 27.18	7 13.00	22 42 31.5	42 47.6	9.34277	9.3967	2.96	4.98	24 22 55.6
26	7 12 44.04	12 30.16	22 36 12.7	36 30.2	9.34226	9.4422	2.99	4.98	25 22 56.9
27	7 18 0.52	17 46.97	22 29 14.2	29 33.0	9.34175	9.4838	3.06	4.98	26 22 58.3
28	7 23 16.59	23 3.34	22 21 35.8	21 55.9	9.34112	9.5217	3.10	4.97	27 22 59.6
29	7 28 32.18	28 19.24	22 13 18.0	13 39.2	9.34043	9.5557	3.14	4.96	28 23 0.9
30	7 33 47.24	33 34.62	22 4 21.1	4 43.3	9.33963	9.5869	3.16	4.96	29 23 2.2
31	7 39 1.71	38 49.40	21 54 45.7	55 8.9	9.33883	9.6160	3.20	4.96	30 23 3.6
Aug. 1	7 44 15.57	44 3.57	21 44 31.8	44 56.0	9.33796	9.6433	3.23	4.96	0 23 4.9
2	7 49 28.77	49 17.08	21 33 39.6	34 4.7	9.33695	9.6685	3.23	4.95	1 23 6.2
3	7 54 41.24	54 29.86	21 22 9.8	22 35.6	9.33595	9.6920	3.25	4.95	2 23 7.5
4	7 59 52.98	59 41.89	21 10 2.7	10 29.2	9.33494	9.7143	3.29	4.95	3 23 8.7
5	8 5 3.98	4 53.19	20 57 18.5	57 45.7	9.33385	9.7353	3.31	4.94	4 23 9.9
6	8 10 14.17	10 3.67	20 43 57.7	44 25.5	9.33267	9.7550	3.31	4.93	5 23 11.2
7	8 15 23.51	15 13.30	20 30 00.9	30 29.2	9.33151	9.7733	3.34	4.93	6 23 12.4
8	8 20 32.00	20 22.07	20 15 28.8	15 57.4	9.33023	9.7911	3.34	4.92	7 23 13.6
9	8 25 39.58	25 29.94	20 0 21.3	0 50.3	9.32896	9.8079	3.35	4.91	8 23 14.8
10	8 30 46.25	30 36.87	19 44 39.2	45 8.6	9.32767	9.8236	3.36	4.91	9 23 15.9
11	8 35 52.00	35 42.90	19 28 23.2	28 52.8	9.32634	9.8386	3.36	4.90	10 23 17.1
12	8 40 56.80	40 47.97	19 11 33.6	12 3.4	9.32497	9.8530	3.37	4.89	11 23 18.2
13	8 46 0.63	45 52.06	18 54 10.9	54 40.8	9.32356	9.8666	3.37	4.88	12 23 19.3
14	8 51 3.47	50 55.16	18 36 15.8	36 45.8	9.32215	9.8796	3.37	4.87	13 23 20.4
15	8 56 5.33	55 57.27	18 17 49.0	18 19.0	9.32075	9.8922	3.39	4.87	14 23 21.5
16	9 1 6.20	0 58.40	17 58 51.1	59 21.0	9.31927	9.9037	3.38	4.86	15 23 22.6
17	9 6 6.05	5 58.50	17 39 22.4	39 52.3	9.31781	9.9150	3.37	4.85	16 23 23.7
18	9 11 4.89	10 57.58	17 19 23.7	19 53.5	9.31637	9.9257	3.39	4.84	17 23 24.7
19	9 16 2.75	15 55.67	16 58 55.7	59 25.3	9.31489	9.9360	3.38	4.83	18 23 25.7
20	9 20 59.59	20 52.74	16 37 58.9	38 28.3	9.31343	9.9458	3.38	4.81	19 23 26.7
21	9 25 55.43	25 48.81	16 16 34.1	17 3.2	9.31196	9.9553	3.38	4.80	20 23 27.7
22	9 30 50.26	30 43.86	15 54 41.8	55 10.6	9.31045	9.9642	3.36	4.80	21 23 28.7
23	9 35 44.09	35 37.91	15 32 22.8	32 51.3	9.30904	9.9727	3.38	4.79	22 23 29.6
24	9 40 36.95	40 30.96	15 9 37.8	10 5.9	9.30752	9.9810	3.36	4.78	23 23 30.6
25	9 45 28.81	45 23.04	14 46 27.3	46 55.1	9.30607	9.9888	3.36	4.76	24 23 31.5
26	9 50 19.70	50 14.13	14 22 52.2	23 19.6	9.30467	9.9962	3.36	4.75	25 23 32.4
27	9 55 9.64	55 4.28	13 58 53.2	59 20.1	9.30321	0.0033	3.36	4.73	26 23 33.3
28	9 59 58.62	59 53.45	13 34 30.8	34 57.2	9.30180	0.0102	3.36	4.72	27 23 34.2
29	10 4 46.66	4 41.67	13 9 45.8	10 11.7	9.30034	0.0166	3.33	4.71	28 23 35.1
30	10 9 33.76	9 28.96	12 44 39.0	45 4.4	9.29901	0.0229	3.33	4.69	29 23 35.9
31	10 14 19.98	14 15.36	+12 19 11.0	19 35.9	+9.29766	−0.0288	−3.32	−4.68	30 23 36.7

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1	10 19 5.32	19 0.89	+11 53 22.6	53 46.9	+9.29632	−0.0344	−3.31	−4.66	0 23 37.6
2	10 23 49.79	23 45.53	11 27 14.5	27 38.2	9.29499	0.0398	3.29	4.64	1 23 38.4
3	10 28 33.41	28 29.32	11 0 47.5	1 10.6	9.29375	0.0448	3.28	4.63	2 23 39.2
4	10 33 16.23	33 12.31	10 34 2.4	34 24.8	9.29252	0.0497	3.26	4.61	3 23 40.0
5	10 37 58.26	37 54.49	10 6 59.6	7 21.5	9.29133	0.0543	3.25	4.59	4 23 40.7
6	10 42 39.53	42 35.92	9 39 40.0	40 1.3	9.29018	0.0585	3.23	4.57	5 23 41.5
7	10 47 20.06	47 16.58	9 12 4.5	12 25.2	9.28902	0.0627	3.20	4.55	6 23 42.1
8	10 51 59.87	51 56.53	8 44 13.6	44 33.7	9.28796	0.0666	3.18	4.53	7 23 42.8
9	10 56 39.02	56 35.82	8 16 7.9	16 27.4	9.28698	0.0703	3.16	4.51	8 23 43.5
10	11 1 17.55	1 14.50	7 47 48.4	48 7.1	9.28600	0.0738	3.13	4.47	9 23 44.2
11	11 5 55.47	5 52.56	7 19 15.7	19 33.7	9.28508	0.0770	3.10	4.44	10 23 44.9
12	11 10 32.82	10 30.05	6 50 30.6	50 47.9	9.28421	0.0800	3.06	4.41	11 23 45.6
13	11 15 9.61	15 6.99	6 21 33.8	21 50.5	9.28341	0.0828	3.03	4.39	12 23 46.2
14	11 19 45.97	19 43.46	5 52 26.2	52 42.2	9.28267	0.0855	2.99	4.36	13 23 46.9
15	11 24 21.85	24 19.48	5 23 8.2	23 23.4	9.28203	0.0880	2.96	4.33	14 23 47.6
16	11 28 57.33	28 55.07	4 53 40.5	53 55.0	9.28140	0.0903	2.91	4.29	15 23 48.2
17	11 33 32.43	33 30.31	4 24 3.9	24 17.6	9.28083	0.0923	2.86	4.25	16 23 48.9
18	11 38 7.19	38 5.21	3 54 19.2	54 32.0	9.28032	0.0942	2.81	4.19	17 23 49.6
19	11 42 41.65	42 39.78	3 24 27.2	24 39.2	9.27985	0.0959	2.68	4.16	18 23 50.2
20	11 47 15.84	47 14.11	2 54 28.5	54 39.9	9.27949	0.0974	2.59	4.08	19 23 50.9
21	11 51 49.82	51 48.20	2 24 23.9	24 34.6	9.27918	0.0987	2.46	4.03	20 23 51.5
22	11 56 23.63	56 22.13	1 54 14.2	54 24.1	9.27895	0.0999	2.29	3.99	21 23 52.1
23	12 0 57.31	0 55.92	1 24 0.1	24 9.3	9.27879	0.1009	1.99	3.86	22 23 52.7
24	12 5 30.91	5 29.64	0 53 42.1	53 50.6	9.27868	0.1017	−1.38	3.71	23 23 53.3
25	12 10 4.46	10 3.30	+ 0 23 21.0	23 28.7	9.27865	0.1024	+1.68	3.46	24 23 53.9
26	12 14 38.00	14 36.96	− 0 7 2.4	6 55.4	9.27865	0.1028	2.16	2.99	25 23 54.5
27	12 19 11.56	19 10.63	0 37 27.1	37 20.9	9.27871	0.1029	2.38	−2.38	26 23 55.1
28	12 23 45.18	23 44.36	1 7 52.2	7 46.8	9.27885	0.1030	2.53	+3.08	27 23 55.7
29	12 28 18.91	28 18.21	1 38 17.4	38 12.7	9.27903	0.1030	2.68	3.59	28 23 56.3
30	12 32 52.78	32 52.19	2 8 42.1	8 38.1	9.27933	0.1027	2.72	3.72	29 23 56.9
Oct. 1	12 37 26.85	37 26.37	2 39 5.2	39 2.0	9.27966	0.1023	2.83	3.86	30 23 57.5
2	12 42 1.14	42 0.78	3 9 26.0	9 23.6	9.28009	0.1016	2.83	3.98	1 23 58.1
3	12 46 35.72	46 35.49	3 39 43.8	39 42.3	9.28050	0.1008	2.91	4.03	2 23 58.8
4	12 51 10.59	51 10.50	4 9 57.8	9 57.2	9.28102	0.0999	2.96	4.11	3 23 59.5
5	12 55 45.81	55 45.85	4 40 7.3	40 7.5	9.28159	0.0987	3.03	4.16	5 0 0.2
6	13 0 21.42	0 21.57	5 10 11.4	10 12.4	9.28227	0.0972	3.04	4.19	6 0 0.8
7	13 4 57.47	4 57.74	5 40 9.3	40 11.0	9.28296	0.0957	3.08	4.25	7 0 1.4
8	13 9 33.98	9 34.38	6 10 0.5	10 2.9	9.28371	0.0940	3.13	4.33	8 0 2.1
9	13 14 11.00	14 11.52	6 39 44.2	39 47.4	9.28456	0.0920	3.16	4.35	9 0 2.7
10	13 18 48.58	18 49.24	7 9 19.3	9 23.5	9.28550	0.0898	3.18	4.37	10 0 3.4
11	13 23 26.77	23 27.56	7 38 45.2	38 50.3	9.28645	0.0875	3.20	4.41	11 0 4.1
12	13 28 5.59	28 6.52	8 8 1.3	8 7.1	9.28745	0.0849	3.23	4.45	12 0 4.8
13	13 32 45.08	32 46.15	8 37 6.7	37 13.3	9.28855	0.0822	3.26	4.47	13 0 5.5
14	13 37 25.30	37 26.53	9 6 0.8	6 8.3	9.28965	0.0793	3.30	4.50	14 0 6.3
15	13 42 6.26	42 7.65	9 34 42.7	34 51.1	9.29092	0.0761	3.30	4.53	15 0 7.1
16	13 46 48.04	46 49.57	10 3 11.6	3 20.8	9.29217	0.0727	3.32	4.54	16 0 7.8
17	13 51 30.65	51 32.34	10 31 26.6	31 36.6	9.29349	0.0690	3.33	4.56	17 0 8.6
18	13 56 14.13	56 15.98	10 59 27.1	59 38.0	9.29481	0.0653	3.36	4.59	18 0 9.4
19	14 0 58.50	1 0.52	11 27 12.6	27 24.3	9.29621	0.0612	3.37	4.61	19 0 10.2
20	14 5 43.81	5 45.99	11 54 41.9	54 54.4	9.29772	0.0567	3.37	4.63	20 0 11.0
21	14 10 30.11	10 32.46	12 21 54.0	22 7.4	9.29919	0.0522	3.39	4.65	21 0 11.8
22	14 15 17.40	15 19.94	12 48 48.4	49 2.6	9.30073	0.0472	3.40	4.66	22 0 12.7
23	14 20 5.72	20 8.43	13 15 24.2	15 39.1	9.30227	0.0421	3.41	4.67	23 0 13.5
24	14 24 55.08	24 57.98	13 41 40.8	41 56.5	9.30380	0.0368	3.42	4.70	24 0 14.4
25	14 29 45.53	29 48.62	14 7 37.5	7 53.9	9.30552	0.0310	3.43	4.72	25 0 15.3
26	14 34 37.08	34 40.37	14 33 13.1	33 30.3	9.30717	0.0249	3.45	4.73	26 0 16.2
27	14 39 29.76	39 33.25	14 58 26.9	58 44.8	9.30889	0.0185	3.45	4.74	27 0 17.1
28	14 44 23.60	44 27.30	15 23 18.1	23 36.7	9.31061	0.0119	3.45	4.76	28 0 18.1
29	14 49 18.60	49 22.52	15 47 46.1	48 5.4	9.31232	0.0049	3.46	4.78	29 0 19.1
30	14 54 14.77	54 18.91	16 11 49.9	12 9.9	9.31402	9.9975	3.47	4.79	30 0 20.1
31	14 59 12.12	59 16.49	−16 35 28.6	35 49.2	+9.31584	−9.9897	+3.46	+4.80	31 0 21.1

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1	15 4 10.70	4 15.29	+16 58 41.5	59 2.7	+9.31756	−9.9814	+3.46	+4.81	1 0 22.1
2	15 9 10.47	9 15.29	17 21 27.7	21 49.4	9.31928	9.9729	3.47	4.82	2 0 23.1
3	15 14 11.45	14 16.52	17 43 46.6	44 8.9	9.32107	9.9639	3.47	4.84	3 0 24.2
4	15 19 13.67	19 18.99	18 5 37.3	6 0.1	9.32287	9.9544	3.47	4.85	4 0 25.3
5	15 24 17.13	24 22.70	18 26 59.0	27 22.2	9.32461	9.9445	3.47	4.86	5 0 26.4
6	15 29 21.81	29 27.64	18 47 51.0	48 14.6	9.32634	9.9341	3.47	4.87	6 0 27.5
7	15 34 27.71	34 33.82	19 8 12.5	8 36.5	9.32810	9.9230	3.47	4.88	7 0 28.7
8	15 39 34.85	39 41.24	19 28 2.6	28 27.0	9.32988	9.9115	3.46	4.90	8 0 29.9
9	15 44 43.23	44 49.90	19 47 20.6	47 45.3	9.33158	9.8993	3.46	4.91	9 0 31.1
10	15 49 52.82	49 59.79	20 6 5.8	6 30.7	9.33327	9.8864	3.46	4.91	10 0 32.4
11	15 55 3.61	55 10.88	20 24 17.3	24 42.4	9.33497	9.8730	3.46	4.93	11 0 33.6
12	16 0 15.61	0 23.19	20 41 54.7	42 19.9	9.33664	9.8588	3.46	4.94	12 0 34.9
13	16 5 28.80	5 36.69	20 58 57.2	59 22.5	9.33829	9.8438	3.43	4.94	13 0 36.2
14	16 10 43.16	10 51.36	21 15 24.0	15 49.2	9.33984	9.8280	3.43	4.95	14 0 37.5
15	16 15 58.65	16 7.17	21 31 14.5	31 39.6	9.34145	9.8112	3.40	4.96	15 0 38.8
16	16 21 15.28	21 24.11	21 46 28.0	46 52.9	9.34295	9.7934	3.41	4.96	16 0 40.1
17	16 26 33.00	26 42.17	22 1 3.8	1 28.5	9.34444	9.7746	3.41	4.97	17 0 41.5
18	16 31 51.80	32 1.29	22 15 1.4	15 25.7	9.34593	9.7547	3.37	4.98	18 0 42.8
19	16 37 11.66	37 21.49	22 28 20.3	28 44.2	9.34729	9.7335	3.36	4.99	19 0 44.2
20	16 42 32.51	42 42.69	22 40 59.7	41 23.1	9.34862	9.7106	3.35	5.00	20 0 45.6
21	16 47 54.32	48 4.84	22 52 58.9	53 21.7	9.34989	9.6862	3.33	5.00	21 0 47.0
22	16 53 17.05	53 27.91	23 4 17.5	4 39.6	9.35112	9.6601	3.30	5.00	22 0 48.4
23	16 58 40.67	58 51.90	23 14 55.1	15 16.5	9.35225	9.6321	3.28	5.01	23 0 49.9
24	17 4 5.11	4 16.71	23 24 51.2	25 11.7	9.35334	9.6013	3.23	5.01	24 0 51.4
25	17 9 30.33	9 42.29	23 34 5.1	34 24.7	9.35435	9.5685	3.20	5.02	25 0 52.9
26	17 14 56.28	15 8.61	23 42 36.7	42 55.2	9.35528	9.5320	3.16	5.02	26 0 54.4
27	17 20 22.90	20 35.60	23 50 25.3	50 42.7	9.35615	9.4921	3.10	5.03	27 0 55.9
28	17 25 50.13	26 3.19	23 57 30.7	57 46.8	9.35686	9.4478	3.09	5.03	28 0 57.4
29	17 31 17.89	31 31.31	24 3 52.4	4 7.1	9.35759	9.3973	3.01	5.03	29 0 58.9
30	17 36 46.16	36 59.94	24 9 29.9	9 43.2	9.35820	9.3408	2.91	5.03	30 1 0.4
Dec. 1	17 42 14.85	42 28.99	24 14 23.3	14 35.0	9.35870	9.2749	2.83	5.03	1 1 1.9
2	17 47 43.89	47 58.39	24 18 32.2	18 42.2	9.35911	9.1971	2.72	5.04	2 1 3.4
3	17 53 13.21	53 28.08	24 21 56.4	22 4.6	9.35944	9.1008	2.64	5.04	3 1 5.0
4	17 58 42.76	58 57.99	24 24 35.6	24 42.0	9.35975	8.9784	+2.29	5.04	4 1 6.5
5	18 4 12.49	4 28.09	24 26 30.0	26 34.3	9.35992	8.8050		5.05	5 1 8.1
6	18 9 42.31	9 58.25	24 27 39.2	27 41.3	9.35993	8.5082	−1.68	5.04	6 1 9.6
7	18 15 12.13	15 28.44	24 28 3.0	28 3.0	9.35996	−6.8830	2.46	5.04	7 1 11.2
8	18 20 41.92	20 58.57	24 27 41.5	27 39.2	9.35979	+8.4870	2.46	5.04	8 1 12.7
9	18 26 11.58	26 28.59	24 26 34.7	26 30.0	9.35969	8.7944	2.76	5.04	9 1 14.3
10	18 31 41.11	31 58.48	24 24 42.6	24 35.4	9.35943	8.9704	2.89	5.04	10 1 15.9
11	18 37 10.40	37 28.12	24 22 5.6	21 55.8	9.35905	9.0960	2.93	5.04	11 1 17.5
12	18 42 39.37	42 57.41	24 18 43.5	18 31.1	9.35869	9.1932	3.03	5.04	12 1 19.0
13	18 48 7.97	48 26.33	24 14 36.4	14 21.2	9.35806	9.2724	3.06	5.04	13 1 20.5
14	18 33 36.13	53 54.81	24 9 44.5	9 26.5	9.35745	9.3393	3.14	5.03	14 1 22.0
15	18 59 3.80	59 22.81	24 4 7.9	3 47.0	9.35673	9.3967	3.16	5.03	15 1 23.6
16	19 4 30.91	4 50.23	23 57 47.0	57 23.1	9.35599	9.4470	3.21	5.02	16 1 25.1
17	19 9 57.42	10 17.04	23 50 42.2	50 15.2	9.35508	9.4919	3.22	5.02	17 1 26.6
18	19 15 23.24	15 43.15	23 42 53.7	42 23.6	9.35418	9.5320	3.29	5.02	18 1 28.1
19	19 20 48.36	21 8.55	23 34 21.9	33 48.6	9.35319	9.5689	3.29	5.01	19 1 29.6
20	19 26 12.68	26 33.15	23 25 6.9	24 30.3	9.35213	9.6027	3.34	5.01	20 1 31.0
21	19 31 36.19	31 56.94	23 15 9.0	14 29.2	9.35095	9.6334	3.36	5.01	21 1 32.5
22	19 36 58.80	37 19.81	23 4 29.1	3 45.9	9.34971	9.6618	3.37	5.00	22 1 33.9
23	19 42 20.47	42 41.75	22 53 7.5	52 20.9	9.34844	9.6883	3.41	5.00	23 1 35.4
24	19 47 41.16	48 2.63	22 41 4.6	40 14.5	9.34699	9.7130	3.40	4.99	24 1 36.8
25	19 53 0.79	53 22.55	22 28 20.9	27 27.4	9.34563	9.7359	3.43	4.99	25 1 38.2
26	19 58 19.38	58 41.36	22 14 57.2	14 0.1	9.34412	9.7577	3.44	4.97	26 1 39.5
27	20 3 36.84	3 59.04	22 0 53.5	59 52.9	9.34256	9.7779	3.47	4.96	27 1 40.9
28	20 8 53.14	9 15.55	21 46 10.8	45 6.7	9.34093	9.7970	3.47	4.96	28 1 42.2
29	20 14 8.24	14 30.85	21 30 49.7	29 42.0	9.33926	9.8150	3.47	4.96	29 1 43.5
30	20 19 22.12	19 44.92	21 14 50.9	13 39.6	9.33754	9.8319	3.48	4.94	30 1 44.8
31	20 24 34.75	24 57.73	+20 58 15.1	57 0.3	+9.33577	+9.8479	−3.50	+4.94	31 1 46.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Jan. 1.2	7 45 52.99	45 21.43	+25 13 54.8	15 45.4	−8.82686	+9.3804	−3.64	−4.08	1 12 59.7
2.2	7 44 15.38	43 43.59	25 19 36.8	21 25.9	8.83404	9.3728	3.58	4.15	2 12 54.1
3.2	7 42 36.34	42 4.24	25 25 13.7	27 0.7	8.84067	9.3651	3.53	4.21	3 12 48.5
4.2	7 40 55.87	40 23.46	25 30 44.2	32 29.0	8.84646	9.3564	3.48	4.26	4 12 42.9
5.2	7 39 14.15	38 41.51	25 36 8.0	37 50.1	8.85128	9.3466	3.38	4.29	5 12 37.3
6.2	7 37 31.42	36 58.60	25 41 23.9	43 3.1	8.85505	9.3352	3.27	4.32	6 12 31.7
7.2	7 35 47.92	35 14.97	25 46 31.2	48 7.3	8.85784	9.3234	3.13	4.35	7 12 26.1
8.2	7 34 3.86	33 30.88	25 51 29.3	53 1.9	8.85974	9.3089	2.92	4.38	8 12 20.5
9.2	7 32 19.45	31 46.53	25 56 17.6	57 46.5	8.86169	9.2935	−2.42	4.40	9 12 14.9
10.2	7 30 34.93	30 2.15	26 0 55.3	2 20.5	8.86067	9.2766	+2.46	4.42	10 12 9.2
11.2	7 28 50.53	28 17.94	26 5 22.0	6 43.2	8.85974	9.2582	2.90	4.44	11 12 3.6
12.2	7 27 6.45	26 34.11	26 9 37.2	10 54.3	8.85792	9.2384	3.11	4.45	12 11 57.9
13.2	7 25 22.92	24 50.91	26 13 40.6	14 53.7	8.85521	9.2171	3.26	4.46	13 11 51.3
14.2	7 23 40.13	23 8.54	26 17 32.0	18 41.1	8.85160	9.1942	3.36	4.47	14 11 46.6
15.2	7 21 58.31	21 27.20	26 21 11.2	22 16.2	8.84704	9.1700	3.45	4.48	15 11 41.0
16.2	7 20 17.66	19 47.10	26 24 38.0	25 38.7	8.84153	9.1436	3.52	4.48	16 11 35.4
17.2	7 18 38.38	18 8.39	26 27 52.1	28 48.8	8.83516	9.1152	3.58	4.49	17 11 29.8
18.2	7 17 0.65	16 31.27	26 30 53.5	31 46.3	8.827 2	9.0850	3.63	4.49	18 11 24.2
19.2	7 15 24.63	14 55.91	26 33 42.4	34 31.2	8.81975	9.0528	3.67	4.49	19 11 18.7
20.2	7 13 50.50	13 22.48	26 36 18.8	37 3.4	8.81067	9.0176	3.70	4.49	20 11 13.2
21.2	7 12 18.41	11 51.14	26 38 42.4	39 23.1	8.70068	8.9795	3.73	4.49	21 11 7.7
22.2	7 10 48.52	10 22.04	26 40 53.5	41 30.4	8.78969	8.9382	3.76	4.48	22 11 2.3
23.2	7 9 20.98	8 55.32	26 42 52.2	43 25.5	8.77768	8.8934	3.78	4.47	23 10 56.9
24.2	7 7 55.92	7 31.12	26 44 38.9	45 8.4	8.764 7	8.8447	3.80	4.46	24 10 51.6
25.2	7 6 33.50	6 9.56	26 46 13.7	46 39.6	8.75039	8.7908	3.82	4.45	25 10 46.3
26.1	7 5 13.83	4 50.80	26 47 36.8	47 59.2	8.73512	8.7301	3.84	4.44	26 10 41.0
27.1	7 3 57.02	3 34.92	26 48 48.4	49 7.4	8.71864	8.6612	3.86	4.43	27 10 35.8
28.1	7 2 43.17	2 22.03	26 49 48.9	50 4.5	8.70090	8.5816	3.87	4.42	28 10 30.6
29.1	7 1 32.38	1 12.24	26 50 38.4	50 50.9	8.68181	8.4875	3.88	4.41	29 10 25.5
30.1	7 0 24.75	0 5.62	26 51 17.4	51 27.0	8.66118	8.3725	3.89	4.40	30 10 20.5
31.1	6 59 20.37	59 2.26	26 51 46.3	51 53.0	8.63902	8.2209	3.90	4.38	31 10 15.6
Feb. 1.1	6 58 19.32	58 2.21	26 52 5.4	52 9.4	8.61510	7.9970	3.91	4.37	1 10 10.7
2.1	6 57 21.66	57 5.55	26 52 15.0	52 16.3	8.58940	+7.5362	3.92	4.35	2 10 5.8
3.1	6 56 27.43	56 12.36	26 52 15.3	52 14.1	8.56168	−7.4491	3.93	4.33	3 10 1.0
4.1	6 55 36.69	55 22.66	26 52 6.9	52 3.2	8.53161	7.9420	3.93	4.31	4 9 56.2
5.1	6 54 49.47	54 36.50	26 51 50.2	51 44.0	8.49898	8.1607	3.93	4.29	5 9 51.5
6.1	6 54 5.82	53 53.88	26 51 25.3	51 16.6	8.46354	8.3003	3.93	4.27	6 9 46.8
7.1	6 53 25.73	53 14.83	26 50 52.8	50 41.7	8.42484	8.4015	3.93	4.25	7 9 42.2
8.1	6 52 49.21	52 39.37	26 50 12.8	49 59.8	8.38222	8.4801	3.93	4.23	8 9 37.7
9.1	6 52 16.28	52 7.50	26 49 25.9	49 11.0	8.33496	8.5432	3.93	4.21	9 9 33.3
10.1	6 51 46.93	51 39.19	26 48 32.3	48 15.6	8.28200	8.5952	3.93	4.18	10 9 28.9
11.1	6 51 21.14	51 14.44	26 47 32.5	47 14.1	8.22194	8.6396	3.93	4.16	11 9 24.5
12.1	6 50 58.91	50 53.24	26 46 26.7	46 6.8	8.15265	8.6780	3.93	4.14	12 9 20.2
13.1	6 50 40.20	50 35.55	26 45 15.3	44 53.9	8.07094	8.7117	3.93	4.12	13 9 15.9
14.1	6 50 24.99	50 21.32	26 43 58.4	43 35.3	7.97149	8.7423	3.92	4.09	14 9 11.7
15.1	6 50 13.22	50 10.52	26 42 36.2	42 11.7	7.84424	8.7695	3.91	4.06	15 9 7.6
16.1	6 50 4.86	50 3.11	26 41 9.0	40 43.2	7.66609	8.7939	3.91	4.04	16 9 3.6
17.1	6 49 59.86	49 59.06	26 39 37.1	39 9.9	7.36346	8.8164	3.91	4.02	17 8 59.7
18.1	6 49 58.20	49 58.31	26 38 0.4	37 31.9	−5.23928	8.8371	3.90	4.01	18 8 55.8
19.1	6 49 59.81	50 0.83	26 36 19.2	35 49.4	+7.34882	8.8557	3.89	4.00	19 8 51.9
20.1	6 50 4.62	50 6.56	26 34 33.8	34 2.8	7.64850	8.8728	3.88	3.99	20 8 48.1
21.1	6 50 12.62	50 15.45	26 32 44.3	32 12.1	7.82233	8.8891	3.88	3.98	21 8 44.3
22.1	6 50 23.75	50 27.46	26 30 50.7	30 17.4	7.94442	8.9044	3.88	3.97	22 8 40.6
23.1	6 50 37.95	50 42.53	26 28 53.2	28 18.7	8.03823	8.9190	3.87	3.96	23 8 36.9
24.1	6 50 55.19	51 0.62	26 26 51.7	26 16.1	8.11396	8.9331	3.86	3.96	24 8 33.3
25.1	6 51 15.38	51 21.67	26 24 46.4	24 9.7	8.17740	8.9465	3.85	3.96	25 8 29.8
26.1	6 51 38.51	51 45.64	26 22 37.2	21 59.5	8.23222	8.9592	3.85	3.95	26 8 26.3
27.1	6 52 4.53	52 12.49	26 20 24.2	19 45.6	8.28004	8.9713	3.84	3.95	27 8 22.8
28.1	6 52 33.39	52 42.15	26 18 7.6	17 28.0	8.32229	8.9828	3.83	3.95	28 8 19.3
29.1	6 53 5.01	53 14.59	26 15 47.4	15 6.5	8.36015	8.9939	3.82	3.95	29 8 15.9
30.1	6 53 39.38	53 49.74	26 13 23.6	12 41.4	8.39443	9.0049	3.81	3.95	30 8 12.5
31.1	6 54 16.43	53 27.57	+26 10 56.1	10 12.8	+8.42558	−9.0157	+3.80	−3.95	32 8 9.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1.1	6 53 5.01	53 14.59	+26 15 47.4	15 6.5	+8.36015	−8.9939	+3.82	−3.95	1 8 15.9
2.1	6 53 39.38	53 49.74	26 13 23.6	12 41.4	8.39443	9.0049	3.81	3.95	2 8 12.5
3.1	6 54 16.43	54 27.57	26 10 56.1	10 12.8	8.42558	9.0157	3.80	3.95	3 8 9.2
4.0	6 54 56.10	55 8.03	26 8 25.0	7 40.7	8.45411	9.1260	3.79	3.95	4 8 5.9
5.0	6 55 38.36	55 51.02	26 5 50.3	5 4.9	8.48027	9.1365	3.78	3.95	5 8 2.6
6.0	6 56 23.13	56 36.54	26 3 11.9	2 25.4	8.50449	9.1463	3.77	3.96	6 7 59.4
7.0	6 57 10.37	57 24.53	25 60 29.9	59 42.2	8.52702	9.1562	3.76	3.96	7 7 56.2
8.0	6 58 0.03	58 14.92	25 57 44.1	56 55.2	8.54797	9.1660	3.75	3.96	8 7 53.1
9.0	6 58 52.07	59 7.65	25 54 54.6	54 4.5	8.56747	9.1756	3.74	3.96	9 7 50.0
10.0	6 59 46.41	60 2.68	25 52 1.3	51 10.0	8.58566	9.1850	3.73	3.96	10 7 47.0
11.0	7 0 42.99	0 59.94	25 49 4.3	48 11.8	8.60270	9.1942	3.72	3.96	11 7 44.1
12.0	7 1 41.77	1 59.37	25 46 3.5	45 9.8	8.61874	9.2035	3.71	3.97	12 7 41.2
13.0	7 2 42.69	3 0.94	25 42 58.8	42 3.8	8.63375	9.2127	3.70	3.97	13 7 38.3
14.0	7 3 45.69	4 4.60	25 39 50.2	38 54.0	8.64789	9.2216	3.69	3.97	14 7 35.5
15.0	7 4 50.71	5 10.27	25 36 37.7	35 40.2	8.66125	9.2306	3.68	3.98	15 7 32.7
16.0	7 5 57.70	6 17.90	25 33 21.2	32 22.3	8.67383	9.2395	3.67	3.99	16 7 29.9
17.0	7 7 6.61	7 27.42	25 30 0.6	29 0.2	8.68578	9.2485	3.65	4.00	17 7 27.1
18.0	7 8 17.39	8 38.80	25 26 35.8	25 34.1	8.69707	9.2574	3.64	4.00	18 7 24.4
19.0	7 9 29.98	9 51.99	25 23 6.8	22 3.6	8.70775	9.2663	3.63	4.01	19 7 21.7
20.0	7 10 44.32	11 6.90	25 19 33.4	18 28.8	8.71789	9.2752	3.62	4.02	20 7 19.0
21.0	7 12 0.38	12 23.53	25 15 55.7	14 49.6	8.72757	9.2840	3.61	4.03	21 7 16.3
22.0	7 13 18.12	13 41.83	25 12 13.5	11 5.9	8.73679	9.2929	3.59	4.04	22 7 13.7
23.0	7 14 37.48	15 1.74	25 8 26.7	7 17.5	8.74554	9.3018	3.58	4.04	23 7 11.1
24.0	7 15 58.42	16 23.22	25 4 35.2	3 24.4	8.75394	9.3106	3.57	4.05	24 7 8.5
25.0	7 17 20.90	17 46.25	24 60 39.0	59 26.5	8.76200	9.3192	3.56	4.06	25 7 5.9
26.0	7 18 44.90	19 10.79	24 56 38.1	55 23.9	8.76975	9.3279	3.55	4.07	26 7 3.4
27.0	7 20 10.39	20 36.79	24 52 32.3	51 16.3	8.77717	9.3366	3.54	4.08	27 7 0.9
28.0	7 21 37.31	22 4.23	24 48 21.5	47 3.7	8.78427	9.3453	3.53	4.09	28 6 58.4
29.0	7 23 5.64	23 33.07	24 44 5.7	42 46.0	8.79110	9.3538	3.52	4.10	29 6 55.9
30.0	7 24 35.44	25 3.29	24 39 44.8	38 23.2	8.79769	9.3625	3.51	4.11	30 6 52.4
31.0	7 26 6.39	26 34.83	24 35 18.6	33 54.7	8.80399	9.3711	3.50	4.11	31 6 51.0
Apr. 1.0	7 27 38.72	28 7.66	24 30 47.1	29 21.6	8.81003	9.3796	3.49	4.11	1 6 48.6
2.0	7 29 12.34	29 41.78	24 26 10.3	24 42.7	8.81583	9.3881	3.48	4.12	2 6 46.2
3.0	7 30 47.18	31 17.13	24 21 28.1	19 58.5	8.82139	9.2965	3.46	4.12	3 6 43.9
4.0	7 32 23.23	32 53.67	24 16 40.3	15 8.7	8.82680	9.3049	3.46	4.12	4 6 41.6
5.0	7 34 0.43	34 31.38	24 11 47.0	10 13.3	8.83200	9.3131	3.45	4.12	5 6 39.3
6.0	7 35 38.83	36 10.21	24 6 48.1	5 12.2	8.83685	9.3213	3.43	4.13	6 6 37.0
7.0	7 37 18.30	37 50.16	24 1 43.5	0 5.5	8.84171	9.3293	3.41	4.14	7 6 34.7
8.0	7 38 58.86	39 31.17	23 56 33.3	54 53.1	8.84628	9.3373	3.40	4.14	8 6 32.5
8.9	7 40 40.45	41 13.21	23 51 17.3	49 34.8	8.85064	9.3453	3.39	4.14	9 6 30.3
9.9	7 42 23.05	42 56.23	23 45 55.5	44 10.8	8.85486	9.3531	3.37	4.14	10 6 28.1
10.9	7 44 6.62	44 40.25	23 40 27.9	38 41.0	8.85890	9.3609	3.35	4.14	11 6 25.9
11.9	7 45 51.15	46 25.20	23 34 54.4	33 5.2	8.86275	9.3687	3.34	4.15	12 6 23.7
12.9	7 47 36.58	48 11.04	23 29 15.0	27 23.4	8.86641	9.3764	3.33	4.16	13 6 21.5
13.9	7 49 22.89	49 57.77	23 23 29.5	21 35.5	8.86997	9.3838	3.32	4.17	14 6 19.4
14.9	7 51 10.06	51 45.35	23 17 38.0	15 41.6	8.87339	9.3913	3.30	4.17	15 6 17.2
15.9	7 52 58.06	53 33.75	23 11 40.4	9 41.5	8.87665	9.3987	3.28	4.17	16 6 15.1
16.9	7 54 46.85	55 22.93	23 5 36.7	3 35.3	8.87974	9.4061	3.26	4.17	17 6 13.0
17.9	7 56 36.40	57 12.85	22 59 26.8	57 23.0	8.88272	9.4133	3.25	4.17	18 6 10.9
18.9	7 58 26.68	59 3.52	22 53 10.8	51 4.4	8.88559	9.4204	3.24	4.17	19 6 8.8
19.9	8 0 17.70	0 54.91	22 46 48.5	44 39.5	8.88843	9.4277	3.23	4.17	20 6 6.7
20.9	8 2 9.43	2 47.01	22 40 19.8	38 8.2	8.89113	9.4348	3.22	4.17	21 6 4.6
21.9	8 4 1.84	4 39.79	22 33 44.8	31 30.6	8.89370	9.4417	3.21	4.17	22 6 2.5
22.9	8 5 54.90	6 33.23	22 27 3.5	24 46.6	8.89620	9.4485	3.20	4.17	23 6 0.5
23.9	8 7 48.61	8 27.31	22 20 15.9	17 56.2	8.89866	9.4553	3.19	4.18	24 5 58.5
24.9	8 9 42.96	10 22.02	22 13 21.9	10 59.4	8.90103	9.4626	3.18	4.18	25 5 56.5
25.9	8 11 37.92	12 17.33	22 6 21.4	3 56.1	8.90330	9.4688	3.17	4.18	26 5 54.5
26.9	8 13 33.47	14 13.23	21 59 14.3	56 46.2	8.90548	9.4754	3.16	4.18	27 5 52.5
27.9	8 15 29.59	16 9.71	21 52 0.8	49 29.9	8.90759	9.4819	3.15	4.18	28 5 50.5
28.9	8 17 26.27	18 6.75	21 44 40.8	42 7.0	8.90968	9.4883	3.13	4.19	29 5 48.5
29.9	8 19 23.51	20 4.33	21 37 14.2	34 37.5	8.91171	9.4948	3.12	4.19	30 5 46.5
30.9	8 21 21.29	22 2.45	+21 29 40.9	27 1.4	+8.91365	−9.5011	+3.10	−4.19	31 5 44.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
May 1.9	8 23 19.58	24 1.02	+21 22 1.1	19 19.4	+8.91550	−9.5073	+3.08	−4.19	2 5 42.5
2.9	8 25 18.37	26 0.14	21 14 14.7	11 30.0	8.91730	9.5135	3.06	4.20	3 5 40.5
3.9	8 27 17.64	27 59.75	21 6 21.7	3 34.0	8.91903	9.5195	3.05	4.20	4 5 38.6
4.9	8 29 17.38	29 59.83	20 58 22.2	55 31.5	8.92071	9.5254	3.04	4.20	5 5 36.6
5.9	8 31 17.58	32 0.35	20 50 16.0	47 22.3	8.92232	9.5314	3.02	4.20	6 5 34.7
6.9	8 33 18.21	34 1.30	20 42 3.2	39 6.5	8.92383	9.5374	3.00	4.20	7 5 32.8
7.9	8 35 19.25	36 2.66	20 33 43.8	30 44.1	8.92529	9.5429	2.98	4.20	8 5 30.9
8.9	8 37 20.69	38 4.42	20 25 18.0	22 15.1	8.92672	9.5484	2.97	4.20	9 5 29.0
9.9	8 39 22.53	40 6.56	20 16 45.7	13 39.7	8.92809	9.5539	2.95	4.20	10 5 27.1
10.9	8 41 24.74	42 9.07	20 8 6.8	4 57.7	8.92935	9.5595	2.93	4.20	11 5 25.2
11.9	8 43 27.20	44 11.92	19 59 21.3	56 9.1	8.93056	9.5648	2.91	4.20	12 5 23.3
12.9	8 45 30.18	46 15.10	19 50 29.4	47 14.0	8.93172	9.5701	2.89	4.20	13 5 21.4
13.9	8 47 33.39	48 18.60	19 41 30.9	38 12.4	8.93281	9.5754	2.88	4.20	14 5 19.5
14.9	8 49 36.90	50 22.40	19 32 25.9	29 4.3	8.93389	9.5806	2.87	4.20	15 5 17.6
15.8	8 51 40.72	52 26.51	19 23 14.4	19 49.6	8.93494	9.5857	2.85	4.20	16 5 15.8
16.8	8 53 44.83	54 30.90	19 13 56.5	10 28.5	8.93594	9.5907	2.83	4.20	17 5 13.9
17.8	8 55 49.22	56 35.56	19 4 32.2	1 1.0	8.93690	9.5956	2.81	4.19	18 5 12.1
18.8	8 57 53.89	58 40.48	18 55 1.5	51 27.1	8.93773	9.6001	2.79	4.19	19 5 10.2
19.8	8 59 58.75	60 45.66	18 45 24.4	41 46.8	8.93855	9.6049	2.77	4.19	20 5 8.4
20.8	9 2 3.89	2 51.09	18 35 41.0	32 0.1	8.93947	9.6100	2.76	4.19	21 5 6.5
21.8	9 4 9.28	4 56.75	18 25 51.1	22 6.9	8.94030	9.6148	2.75	4.19	22 5 4.7
22.8	9 6 14.90	7 2.64	18 15 54.8	12 7.3	8.94110	9.6194	2.74	4.18	23 5 2.8
23.8	9 8 20.75	9 8.76	18 5 52.2	2 1.4	8.94189	9.6240	2.72	4.18	24 5 1.0
24.8	9 10 26.83	11 15.11	17 55 43.2	51 49.1	8.94266	9.6285	2.71	4.18	25 4 59.1
25.8	9 12 33.13	13 21.68	17 45 28.0	41 30.6	8.94340	9.6328	2.70	4.18	26 4 57.3
26.8	9 14 39.64	15 28.46	17 35 6.7	31 6.0	8.94413	9.6371	2.69	4.18	27 4 55.5
27.8	9 16 46.36	17 35.44	17 24 39.1	20 35.1	8.94483	9.6415	2.68	4.18	28 4 53.7
28.8	9 18 53.28	19 42.62	17 14 5.2	9 57.9	8.94551	9.6458	2.67	4.18	29 4 51.9
29.8	9 21 0.40	21 50.00	16 63 25.1	59 14.4	8.94620	9.6500	2.66	4.18	30 4 50.0
30.8	9 23 7.72	23 57.57	16 52 38.8	48 24.8	8.94686	9.6541	2.65	4.17	31 4 48.2
31.8	9 25 15.23	26 5.32	16 41 46.4	37 29.0	8.94746	9.6585	2.64	4.17	32 4 46.4
June 1.8	9 27 22.90	28 13.25	16 30 47.9	26 27.1	8.94803	9.6622	2.63	4.16	2 4 44.6
2.8	9 29 30.75	30 21.35	16 19 43.4	15 19.2	8.94863	9.6661	2.62	4.16	3 4 42.8
3.8	9 31 38.77	32 29.62	16 8 32.9	4 5.4	8.94921	9.6699	2.61	4.16	4 4 41.0
4.8	9 33 46.96	34 38.06	15 57 16.5	52 45.6	8.94975	9.6737	2.59	4.15	5 4 39.2
5.8	9 35 55.30	36 46.65	15 45 54.2	41 19.9	8.95024	9.6774	2.57	4.15	6 4 37.4
6.8	9 38 3.78	38 55.38	15 34 26.1	29 48.5	8.95071	9.6811	2.55	4.14	7 4 35.6
7.8	9 40 12.40	41 4.25	15 22 52.3	18 11.3	8.95118	9.6847	2.54	4.14	8 4 33.8
8.8	9 42 21.16	43 13.25	15 11 12.7	6 28.4	8.95162	9.6882	2.52	4.14	9 4 32.1
9.8	9 44 30.04	45 22.37	14 59 27.4	54 39.8	8.95201	9.6917	2.50	4.13	10 4 30.3
10.8	9 46 39.03	47 31.60	14 47 36.5	42 45.5	8.95238	9.6951	2.48	4.13	11 4 28.5
11.8	9 48 48.13	49 40.95	14 35 40.0	30 45.7	8.95278	9.6985	2.46	4.12	12 4 26.7
12.8	9 50 57.36	51 50.42	14 23 38.1	18 40.4	8.95319	9.7018	2.44	4.12	13 4 25.0
13.8	9 53 6.70	54 0.01	14 11 30.6	6 29.6	8.95356	9.7051	2.43	4.12	14 4 23.2
14.8	9 55 16.15	56 9.70	13 59 17.7	54 13.4	8.95389	9.7082	2.42	4.11	15 4 21.4
15.8	9 57 25.69	58 19.48	13 46 59.5	41 51.9	8.95421	9.7114	2.41	4.11	16 4 19.6
16.8	9 59 35.33	60 29.36	13 34 36.0	29 25.0	8.95453	9.7145	2.40	4.10	17 4 17.8
17.8	10 1 45.06	2 39.33	13 22 7.2	16 52.8	8.95485	9.7175	2.39	4.10	18 4 16.0
18.8	10 3 54.89	4 49.40	13 9 33.1	4 15.4	8.95518	9.7206	2.38	4.10	19 4 14.2
19.8	10 6 4.82	6 59.57	12 56 53.8	51 32.8	8.95553	9.7235	2.38	4.09	20 4 12.4
20.8	10 8 14.86	9 9.85	12 44 9.4	38 45.0	8.95588	9.7264	2.38	4.09	21 4 10.7
21.8	10 10 25.00	11 20.23	12 31 20.0	25 52.3	8.95622	9.7292	2.38	4.08	22 4 8.9
22.7	10 12 35.24	13 30.71	12 18 25.6	12 54.6	8.95655	9.7320	2.38	4.07	23 4 7.1
23.7	10 14 45.58	15 41.30	11 65 26.1	59 51.8	8.95690	9.7348	2.39	4.07	24 4 5.3
24.7	10 16 56.03	17 51.98	11 52 21.7	46 44.1	8.95725	9.7375	2.40	4.07	25 4 3.6
25.7	10 19 6.58	20 2.77	11 39 12.4	33 31.6	8.95758	9.7402	2.41	4.06	26 4 1.8
26.7	10 21 17.23	22 13.66	11 25 58.3	20 14.3	8.95793	9.7428	2.42	4.05	27 4 0.1
27.7	10 23 27.99	24 24.66	11 12 39.5	6 52.3	8.95830	9.7454	2.42	4.05	28 3 58.3
28.7	10 25 38.86	26 35.78	10 59 15.9	53 25.5	8.95863	9.7479	2.43	4.04	29 3 56.6
29.7	10 27 49.84	28 47.00	10 45 47.7	39 54.0	8.95899	9.7504	2.44	4.03	30 3 54.8
30.7	10 30 0.91	33 58.32	10 32 14.9	26 17.9	8.95933	9.7527	2.45	4.03	31 3 53.1
31.7	10 32 12.09	33 9.75	+10 18 37.6	12 37.4	+8.95971	−9.7552	+2.46	−4.02	32 3 51.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
July 1.7	10 32 12.09	33 9.75	+10 18 37.6	12 37.4	+8.95971	−9.7552	+2.46	−4.02	2 3 51.4
2.7	10 34 23.39	35 21.31	9 64 55.9	58 52.5	8.96010	9.7575	2.46	4.02	3 3 49.7
3.7	10 36 34.81	37 32.96	9 51 9.8	45 3.1	8.96045	9.7598	2.46	4.01	4 3 47.9
4.7	10 38 46.32	39 44.72	9 37 19.4	31 9.5	8.96076	9.7620	2.46	4.01	5 3 46.2
5.7	10 40 57.93	41 56.58	9 23 24.8	17 11.9	8.96109	9.7642	2.45	4.01	6 3 44.4
6.7	10 43 9.64	44 8.54	9 9 26.1	3 10.1	8.96142	9.7663	2.44	4.00	7 3 42.7
7.7	10 45 21.45	46 20.60	8 55 23.3	49 4.1	8.96175	9.7684	2.43	3.99	8 3 40.9
8.7	10 47 33.36	48 32.76	8 41 16.4	34 54.2	8.96210	9.7705	2.42	3.98	9 3 39.2
9.7	10 49 45.38	50 45.03	8 27 5.6	20 40.3	8.96246	9.7725	2.42	3.98	10 3 37.5
10.7	10 51 57.51	52 57.41	8 12 50.9	6 22.6	8.96282	9.7744	2.42	3.97	11 3 35.8
11.7	10 54 9.75	55 9.90	7 58 32.5	52 1.2	8.96317	9.7763	2.42	3.96	12 3 34.0
12.7	10 56 22.09	57 22.50	7 44 10.4	37 36.1	8.96350	9.7781	2.42	3.95	13 3 32.3
13.7	10 58 34.53	59 35.19	7 29 44.7	23 7.4	8.96384	9.7799	2.42	3.94	14 3 30.6
14.7	11 0 47.08	1 47.99	7 15 15.4	8 35.2	8.96420	9.7817	2.43	3.94	15 3 28.9
15.7	11 2 59.74	4 0.91	6 60 42.6	53 50.4	8.96454	9.7834	2.44	3.93	16 3 27.1
16.7	11 5 12.50	6 13.93	6 46 6.3	39 20.2	8.96490	9.7851	2.45	3.92	17 3 25.4
17.7	11 7 25.38	8 27.07	6 31 26.7	24 37.7	8.96531	9.7869	2.47	3.91	18 3 23.7
18.7	11 9 38.39	10 40.35	6 16 43.9	9 52.0	8.96575	9.7883	2.49	3.90	19 3 22.0
19.7	11 11 51.54	12 53.77	5 61 57.8	55 3.1	8.96621	9.7899	2.50	3.90	20 3 20.3
20.7	11 14 4.83	15 7.33	5 47 8.6	40 11.0	8.96665	9.7914	2.52	3.89	21 3 18.6
21.7	11 16 18.25	17 21.02	5 32 16.3	25 15.9	8.96711	9.7929	2.54	3.88	22 3 16.9
22.7	11 18 31.82	19 34.86	5 17 21.0	10 17.8	8.96758	9.7943	2.56	3.87	23 3 15.2
23.7	11 20 45.53	21 48.85	4 62 22.7	55 16.7	8.96806	9.7958	2.58	3.85	24 3 13.5
24.7	11 22 59.40	24 3.00	4 47 21.4	40 12.7	8.96858	9.7972	2.60	3.84	25 3 11.8
25.7	11 25 13.43	26 17.31	4 32 17.2	25 5.8	8.96912	9.7985	2.61	3.83	26 3 10.1
26.7	11 27 27.63	28 31.80	4 17 10.3	9 56.3	8.96967	9.7998	2.62	3.82	27 3 8.4
27.7	11 29 42.00	30 46.46	3 62 0.8	54 44.1	8.97020	9.8010	2.63	3.80	28 3 6.7
28.6	11 31 56.53	33 1.28	3 46 48.8	39 29.4	8.97075	9.8022	2.64	3.78	29 3 5.0
29.6	11 34 11.24	35 16.23	3 31 34.3	24 12.3	8.97131	9.8034	2.65	3.77	30 3 3.3
30.6	11 36 26.12	37 31.47	3 16 17.5	8 52.9	8.97188	9.8045	2.66	3.76	31 3 1.6
31.6	11 38 41.18	39 46.84	2 60 58.3	53 31.2	8.97247	9.8056	2.66	3.74	32 2 59.9
Aug. 1.6	11 40 56.43	42 2.39	2 45 36.9	38 7.2	8.97308	9.8066	2.66	3.72	2 2 58.2
2.6	11 43 11.87	44 18.13	2 30 13.4	22 41.2	8.97369	9.8076	2.66	3.70	3 2 56.5
3.6	11 45 27.50	46 34.07	2 14 47.8	7 13.1	8.97430	9.8086	2.67	3.67	4 2 54.8
4.6	11 47 43.32	48 50.20	1 59 20.1	51 43.0	8.97491	9.8005	2.68	3.64	5 2 53.1
5.6	11 49 59.34	51 6.53	1 43 50.4	36 11.1	8.97556	9.8104	2.69	3.61	6 2 51.5
6.6	11 52 15.56	53 23.06	1 28 19.0	20 37.4	8.97620	9.8112	2.70	3.58	7 2 49.8
7.6	11 54 31.98	55 39.80	1 12 45.9	5 2.0	8.97685	9.8119	2.70	3.56	8 2 48.2
8.6	11 56 48.61	57 56.75	0 56 11.3	49 25.1	8.97752	9.8126	2.71	3.53	9 2 46.5
9.6	11 59 5.45	60 13.92	0 41 35.2	33 46.8	8.97819	9.8133	2.72	3.50	10 2 44.9
10.6	12 1 22.50	2 31.29	0 25 57.7	18 7.1	8.97885	9.8139	2.73	3.47	11 2 43.2
11.6	12 3 39.76	4 48.89	+ 0 10 18.9	2 26.2	8.97955	9.8145	2.74	3.44	12 2 41.6
12.6	12 5 57.25	7 6.72	− 0 5 21.1	13 15.9	8.98027	9.8150	2.74	3.40	13 2 40.0
13.6	12 8 14.97	9 24.78	0 21 2.3	28 59.2	8.98102	9.8155	2.75	3.36	14 2 38.4
14.6	12 10 32.93	11 43.08	0 36 44.5	44 43.4	8.98180	9.8160	2.76	3.32	15 2 36.8
15.6	12 12 51.14	14 1.64	0 52 27.6	60 29.5	8.98257	9.8164	2.77	3.28	16 2 35.2
16.6	12 15 9.60	16 20.46	1 8 11.7	16 14.5	8.98337	9.8168	2.78	3.24	17 2 33.6
17.6	12 17 28.32	18 39.54	1 23 56.6	32 1.2	8.98419	9.8171	2.80	3.20	18 2 32.0
18.6	12 19 47.30	20 58.88	1 39 42.1	47 48.5	8.98501	9.8174	2.81	3.16	19 2 30.4
19.6	12 22 6.55	23 18.50	1 55 28.2	63 36.4	8.98587	9.8177	2.82	3.12	20 2 28.8
20.6	12 24 26.08	25 38.41	2 11 14.8	19 24.7	8.98676	9.8179	2.83	3.08	21 2 27.2
21.6	12 26 45.90	27 58.60	2 27 1.8	35 13.4	8.98764	9.8180	2.84	3.03	22 2 25.6
22.6	12 29 6.00	30 19.08	2 42 49.1	51 2.4	8.98854	9.8182	2.86	2.98	23 2 24.0
23.6	12 31 26.40	32 39.87	2 58 36.8	66 51.7	8.98950	9.8183	2.87	−2.63	24 2 22.4
24.6	12 33 47.12	35 0.98	3 14 24.7	22 41.2	8.99049	9.8184	2.88		25 2 20.8
25.6	12 36 8.16	37 22.41	3 30 12.5	38 30.6	8.99147	9.8183	2.89		26 2 19.2
26.6	12 38 29.52	39 44.17	3 46 0.2	54 19.7	8.99247	9.8183	2.90		27 2 17.6
27.6	12 40 51.21	42 6.27	4 1 47.8	10 8.8	8.99347	9.8182	2.90	+2.63	28 2 16.0
28.6	12 43 13.23	44 28.70	4 17 35.2	25 57.6	8.99448	9.8180	2.91	2.98	29 2 14.4
29.6	12 45 35.57	46 51.46	4 33 22.2	41 46.0	8.99550	9.8179	2.92	3.08	30 2 12.8
30.6	12 47 58.26	49 14.57	4 49 8.7	57 33.8	8.99657	9.8176	2.92	3.16	31 2 11.2
31.6	12 50 21.30	51 38.03	− 5 4 54.5	13 20.8	+8.99763	−9.8173	+2.92	+3.23	32 2 9.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1.6	12 53 44.69	54 1.85	− 5 20 39.6	29 7.1	+8.99866	−9.8169	+2.92	+3.28	2 2 8.1
2.6	12 55 8.43	56 26.03	5 36 23.9	44 52.5	8.99976	9.8165	2.93	3.33	3 2 6.6
3.5	12 57 32.53	58 50.57	5 52 7.3	60 36.8	9.00086	9.8160	2.94	3.38	4 2 5.1
4.5	12 59 57.00	61 15.48	6 7 49.5	16 20.0	9.00197	9.8155	2.95	3.43	5 2 3.6
5.5	13 2 21.84	3 40.76	6 23 30.5	32 1.9	9.00306	9.8149	2.96	3.48	6 2 2.1
6.5	13 4 47.05	6 6.42	6 39 10.3	47 42.5	9.00420	9.8143	2.96	3.53	7 2 0.6
7.5	13 7 12.64	8 32.46	6 54 48.5	63 21.6	9.00534	9.8136	2.97	3.56	8 1 59.1
8.5	13 9 38.61	10 58.80	7 10 25.4	18 59.0	9.00648	9.8129	2.98	3.59	9 1 57.6
9.5	13 12 4.97	13 25.72	7 26 0.4	34 34.6	9.00766	9.8120	2.99	3.62	10 1 56.1
10.5	13 14 31.73	15 52.96	7 41 33.6	50 8.3	9.00885	9.8112	3.00	3.65	11 1 54.6
11.5	13 16 58.90	18 20.61	7 57 4.9	65 40.1	9.01008	9.8102	3.00	3.68	12 1 53.1
12.5	13 19 26.49	20 48.68	8 12 34.2	21 9.8	9.01131	9.8093	3.01	3.71	13 1 51.6
13.5	13 21 54.50	23 17.18	8 28 1.4	36 37.3	9.01255	9.8082	3.02	3.74	14 1 50.1
14.5	13 24 22.93	25 46.11	8 43 26.2	52 2.4	9.01379	9.8071	3.03	3.76	15 1 48.7
15.5	13 26 51.79	28 15.46	8 58 48.6	67 25.1	9.01506	9.8060	3.04	3.78	16 1 47.2
16.5	13 29 21.09	30 45.30	9 14 8.5	22 45.1	9.01637	9.8048	3.04	3.80	17 1 45.8
17.5	13 31 50.85	33 15.58	9 29 25.8	38 2.4	9.01770	9.8035	3.05	3.82	18 1 44.4
18.5	13 34 21.07	35 46.32	9 44 40.3	53 16.9	9.01918	9.8021	3.06	3.84	19 1 43.0
19.5	13 36 51.75	38 17.54	9 59 51.9	68 28.5	9.02055	9.8007	3.06	3.86	20 1 41.6
20.5	13 39 22.92	40 49.25	10 15 0.6	23 37.0	9.02181	9.7993	3.06	3.88	21 1 40.2
21.5	13 41 54.58	43 21.46	10 30 6.1	38 42.2	9.02320	9.7978	3.06	3.89	22 1 39.8
22.5	13 44 26.72	45 54.15	10 45 8.4	53 44.2	9.02458	9.7962	3.07	3.90	23 1 37.4
23.5	13 46 59.35	48 27.34	11 0 7.4	8 42.7	9.02599	9.7945	3.08	3.93	24 1 36.0
24.5	13 49 32.48	51 1.04	11 15 2.7	23 27.5	9.02742	9.7927	3.09	3.95	25 1 34.6
25.5	13 52 6.12	53 35.26	11 29 54.4	38 28.6	9.02888	9.7908	3.10	3.96	26 1 33.2
26.5	13 54 40.28	56 10.00	11 44 42.4	53 15.9	9.02934	9.7891	3.10	3.97	27 1 31.9
27.5	13 57 14.96	58 45.26	11 59 26.5	67 59.2	9.03179	9.7871	3.11	3.99	28 1 30.5
28.5	13 59 50.15	61 21.04	12 14 6.4	22 38.2	9.03324	9.7850	3.11	4.01	29 1 29.2
29.5	14 2 25.87	3 57.35	12 28 42.0	37 12.8	9.03472	9.7828	3.11	4.03	30 1 27.8
30.5	14 5 2.12	6 34.19	12 43 13.2	51 43.0	9.03620	9.7806	3.11	4.05	31 1 36.5
Oct. 1.5	14 7 38.90	9 11.57	12 58 39.9	66 8.5	9.03768	9.7783	3.11	4.06	2 1 25.2
2.5	14 10 16.22	11 49.50	13 12 1.8	20 29.2	9.03915	9.7759	3.11	4.07	3 1 23.9
3.5	14 12 54.08	14 27.98	13 26 18.9	34 44.9	9.04067	9.7734	3.12	4.07	4 1 22.6
4.5	14 15 32.49	17 7.01	13 40 31.2	48 55.6	9.04218	9.7709	3.12	4.09	5 1 21.3
5.5	14 18 11.45	19 46.60	13 54 38.3	63 1.1	9.04368	9.7682	3.12	4.11	6 1 20.0
6.5	14 20 50.96	22 26.74	14 8 40.0	17 1.1	9.04518	9.7654	3.12	4.12	7 1 18.8
7.5	14 23 31.02	24 7.44	14 22 36.2	30 55.5	9.04670	9.7625	3.13	4.13	8 1 17.5
8.5	14 26 11.65	27 48.71	14 36 26.7	44 44.1	9.04824	9.7596	3.14	4.14	9 1 16.3
9.5	14 28 52.85	30 30.55	14 50 11.5	58 26.9	9.04977	9.7564	3.14	4.15	10 1 15.0
10.4	14 31 34.62	33 12.97	15 3 50.4	12 3.7	9.05132	9.7532	3.14	4.16	11 1 13.8
11.4	14 34 16.97	35 55.98	15 17 23.2	25 34.3	9.05288	9.7499	3.14	4.17	12 1 12.5
12.4	14 36 59.91	38 39.59	15 30 49.7	38 58.4	9.05445	9.7465	3.14	4.18	13 1 11.3
13.4	14 39 43.44	41 23.79	15 44 9.8	52 16.0	9.05605	9.7430	3.15	4.19	14 1 10.1
14.4	14 42 27.56	44 8.59	15 57 23.5	65 27.0	9.05761	9.7395	3.15	4.20	15 1 8.9
15.4	14 45 12.29	46 54.00	16 10 30.6	18 31.3	9.05920	9.7357	3.15	4.21	16 1 7.7
16.4	14 47 57.62	49 40.03	16 23 30.7	31 28.5	9.06079	9.7318	3.15	4.22	17 1 6.5
17.4	14 50 43.56	52 26.67	16 36 23.7	44 18.5	9.06239	9.7277	3.16	4.23	18 1 5.3
18.4	14 53 30.11	55 13.92	16 49 9.4	57 1.2	9.06399	9.7236	3.17	4.24	19 1 4.2
19.4	14 56 17.28	58 1.80	17 1 47.9	9 36.5	9.06562	9.7194	3.17	4.25	20 1 3.1
20.4	14 59 5.08	60 50.32	17 14 18.9	22 4.2	9.06723	9.7151	3.17	4.26	21 1 2.0
21.4	15 1 53.50	3 39.47	17 26 42.3	34 24.1	9.06886	9.7106	3.17	4.27	22 1 0.9
22.4	15 4 42.55	6 29.25	17 38 57.9	46 36.2	9.07046	9.7059	3.18	4.28	23 0 59.8
23.4	15 7 32.23	9 19.67	17 51 5.6	58 40.1	9.07209	9.7011	3.19	4.29	24 0 58.7
24.4	15 10 22.55	12 10.73	18 3 5.0	10 35.7	9.07371	9.6961	3.19	4.30	25 0 57.6
25.4	15 13 13.50	15 2.42	18 14 56.2	22 22.9	9.07531	9.6910	3.19	4.31	26 0 56.5
26.4	15 16 5.08	17 54.76	18 26 38.8	34 1.5	9.07692	9.6857	3.19	4.32	27 0 55.5
27.4	15 18 57.30	20 47.73	18 38 12.9	45 31.3	9.07852	9.6802	3.19	4.33	28 0 54.4
28.4	15 21 50.15	23 41.34	18 49 38.0	56 52.1	9.08011	9.6746	3.19	4.33	29 0 53.4
29.4	15 24 43.64	26 35.58	19 0 54.2	8 3.7	9.08160	9.6687	3.19	4.34	30 0 52.3
30.4	15 27 37.75	29 30.46	19 12 1.2	19 6.0	9.08320	9.6627	3.19	4.35	31 0 51.3
31.4	15 30 32.50	32 25.97	19 22 58.1	29 58.5	9.08483	9.6564	3.19	4.36	32 0 50.3
32.4	15 33 27.87	35 22.10	−19 33 46.0	40 41.4	+9.08637	−9.6500	+3.18	+4.37	33 0 49.3

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1.4	15 33 27.87	35 22.10	−19 33 46.0	40 41.4	+9.08637	−9.6500	+3.18	+4.37	2 0 49.3
2.4	15 36 23.87	38 18.86	19 44 24.4	51 14.6	9.08792	9.6433	3.17	4.37	3 0 48.3
3.4	15 39 20.49	41 16.25	19 54 52.8	61 37.9	9.08944	9.6365	3.17	4.38	4 0 47.3
4.4	15 42 17.73	44 14.27	20 5 11.3	11 51.0	9.09197	9.6292	3.17	4.39	5 0 46.3
5.4	15 45 15.60	47 12.91	20 15 19.5	21 53.6	9.09249	9.6219	3.17	4.40	6 0 45.4
6.4	15 48 14.08	50 12.17	20 25 17.2	31 45.6	9.09398	9.6143	3.17	4.41	7 0 44.4
7.4	15 51 13.18	53 12.04	20 35 4.2	41 26.9	9.09547	9.6064	3.17	4.41	8 0 43.5
8.4	15 54 12.89	56 12.52	20 44 40.7	50 57.3	9.09694	9.5983	3.17	4.42	9 0 42.5
9.4	15 57 13.20	59 13.62	20 54 6.3	60 16.7	9.09839	9.5899	3.17	4.43	10 0 41.6
10.4	16 0 14.12	2 15.33	21 3 20.9	9 24.9	9.09986	9.5812	3.17	4.44	11 0 40.7
11.4	16 3 15.65	5 17.65	21 12 24.1	18 21.7	9.10132	9.5721	3.17	4.44	12 0 39.8
12.4	16 6 17.79	8 20.58	21 21 16.0	27 6.9	9.10277	9.5627	3.17	4.44	13 0 38.9
13.4	16 9 20.54	11 24.12	21 29 56.4	35 40.5	9.10421	9.5531	3.17	4.45	14 0 38.0
14.4	16 12 23.89	14 28.27	21 38 25.2	44 2.3	9.10563	9.5431	3.17	4.46	15 0 37.1
15.3	16 15 27.84	17 33.02	21 46 42.0	52 12.1	9.10704	9.5336	3.17	4.47	16 0 36.3
16.3	16 18 32.38	20 38.36	21 54 46.8	60 9.7	9.10841	9.5227	3.16	4.47	17 0 35.4
17.3	16 21 37.50	23 44.28	22 2 39.4	7 54.9	9.10978	9.5104	3.15	4.47	18 0 34.6
18.3	16 24 43.21	26 50.78	22 10 19.7	15 27.7	9.11115	9.4987	3.15	4.48	19 0 33.7
19.3	16 27 49.50	29 57.86	22 17 47.4	22 47.8	9.11249	9.4865	3.14	4.49	20 0 32.9
20.3	16 30 56.36	33 5.51	22 25 2.5	29 55.0	9.11382	9.4738	3.14	4.50	21 0 32.1
21.3	16 34 3.79	36 13.73	22 32 4.9	36 49.3	9.11512	9.4606	3.13	4.50	22 0 31.3
22.3	16 37 11.77	39 22.51	22 38 54.2	43 30.4	9.11639	9.4467	3.12	4.50	23 0 30.5
23.3	16 40 20.30	42 31.83	22 45 30.3	49 58.2	9.11764	9.4323	3.11	4.51	24 0 29.7
24.3	16 43 29.37	45 41.68	22 51 53.4	56 12.7	9.11887	9.4173	3.10	4.52	25 0 28.9
25.3	16 46 38.97	48 52.06	22 58 3.1	62 13.8	9.12004	9.4015	3.09	4.52	26 0 28.1
26.3	16 49 49.10	52 2.96	23 3 59.4	8 1.2	9.12127	9.3850	3.08	4.52	27 0 27.3
27.3	16 52 59.74	55 14.37	23 9 41.8	13 34.6	9.12241	9.3675	3.07	4.52	28 0 26.6
28.3	16 56 10.87	58 26.27	23 15 10.5	18 54.2	9.12350	9.3493	3.06	4.53	29 0 25.8
29.3	16 59 22.47	61 38.63	23 20 25.4	23 59.8	9.12457	9.3301	3.05	4.54	30 0 25.1
30.3	17 2 34.54	4 51.45	23 25 26.3	28 51.3	9.12561	9.3096	3.04	4.54	31 0 24.4
Dec. 1.3	17 5 47.06	8 4.73	23 30 12.8	33 28.3	9.12661	9.2879	3.02	4.54	2 0 23.7
2.3	17 9 0.02	11 18.44	23 34 45.1	37 50.8	9.12759	9.2650	3.01	4.54	3 0 22.0
3.3	17 12 13.41	14 32.58	23 39 2.9	41 58.7	9.12856	9.2405	3.00	4.55	4 0 21.3
4.3	17 15 27.23	17 47.13	23 43 6.2	45 51.9	9.12951	9.2144	2.99	4.56	5 0 20.6
5.3	17 18 41.47	21 2.09	23 46 54.6	49 30.2	9.13043	9.1861	2.98	4.56	6 0 20.9
6.3	17 21 56.11	24 17.45	23 50 28.2	52 53.5	9.13132	9.1559	2.97	4.56	7 0 20.2
7.3	17 25 11.13	27 33.19	23 53 47.0	56 1.8	9.13213	9.1233	2.95	4.56	8 0 19.5
8.3	17 28 26.52	30 49.29	23 56 50.8	58 55.0	9.13294	9.0876	2.94	4.57	9 0 18.8
9.3	17 31 42.27	34 5.74	23 59 39.3	61 33.0	9.13373	9.0485	2.93	4.57	10 0 18.2
10.3	17 34 58.37	37 22.53	24 2 12.7	3 55.7	9.13448	9.0054	2.92	4.57	11 0 17.6
11.3	17 38 14.80	40 39.65	24 4 30.9	6 2.9	9.13521	8.9574	2.90	4.57	12 0 17.0
12.3	17 41 31.56	43 57.09	24 6 33.8	7 54.6	9.13593	8.9029	2.88	4.57	13 0 16.3
13.3	17 44 48.64	47 14.84	24 8 21.2	9 30.8	9.13661	8.8401	2.86	4.58	14 0 15.7
14.3	17 48 6.02	50 32.88	24 9 53.1	10 51.1	9.13726	8.7654	2.84	4.58	15 0 15.0
15.3	17 51 23.60	53 51.20	24 11 9.2	11 55.6	9.13788	8.6754	2.82	4.58	16 0 14.4
16.3	17 54 41.62	57 9.78	24 12 9.5	12 44.3	9.13844	8.5614	2.79	4.58	17 0 13.7
17.3	17 57 59.81	60 28.61	24 12 54.2	13 17.2	9.13901	8.4069	2.76	4.58	18 0 13.1
18.3	18 1 18.26	3 47.69	24 13 23.1	13 34.3	9.13952	8.1638	2.73	4.58	19 0 12.5
19.3	18 4 36.93	7 6.98	24 13 36.2	13 35.6	9.14001	−7.5534	2.70	4.58	20 0 11.9
20.3	18 7 55.82	10 26.48	24 13 33.4	13 20.9	9.14047	+7.8710	2.67	4.58	21 0 11.3
21.3	18 11 14.91	13 46.17	24 13 14.9	12 50.2	9.14087	8.2657	2.64	4.58	22 0 10.7
22.2	18 14 34.17	17 6.02	24 12 40.4	12 3.4	9.14125	8.4700	2.60	4.58	23 0 10.1
23.2	18 17 53.60	20 26.03	24 11 49.9	11 0.5	9.14159	8.6092	2.56	4.59	24 0 9.5
24.2	18 21 13.18	23 46.18	24 10 43.3	9 41.5	9.14189	8.7147	2.51	4.59	25 0 8.9
25.2	18 24 32.88	27 6.43	24 9 20.7	8 6.4	9.14213	8.7992	2.45	4.59	26 0 8.3
26.2	18 27 52.63	30 26.78	24 7 42.0	6 15.0	9.14233	8.8609	2.38	4.59	27 0 7.7
27.2	18 31 12.58	33 47.20	24 5 47.2	4 7.4	9.14254	8.9312	+2.28	4.59	28 0 7.0
28.2	18 34 32.56	37 7.69	24 3 36.2	1 43.6	9.14270	8.9848		4.59	29 0 6.4
29.2	18 37 52.61	40 28.23	23 61 9.2	59 3.7	9.14283	9.0322		4.58	30 0 5.8
30.2	18 41 12.71	43 48.80	23 58 26.1	56 7.6	9.14291	9.0750		4.58	31 0 5.2
31.2	18 44 32.83	47 9.37	23 55 26.9	52 55.4	9.14294	9.1141		4.58	32 0 4.6
32.2	18 47 52.96	50 29.94	−23 52 11.6	49 27.0	+9.14299	+9.1497		+4.56	33 0 4.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Jan. 0.2	20 36 32.06	36 24.22	−19 13 19.4	13 48.0	+8.5844	+9.1441	+2.56	+3.61	0 1 56.5
1.2	20 37 27.43	37 19.62	19 9 58.0	10 26.5	8.5856	9.1476	2.54	3.61	1 1 53.5
2.2	20 38 22.96	38 15.17	19 6 34.9	7 3.4	8.5868	9.1510	2.52	3.61	2 1 50.5
3.2	20 39 18.64	39 10.87	19 3 10.2	3 38.8	8.5880	9.1549	2.50	3.60	3 1 47.5
4.2	20 40 14.47	40 6.71	18 59 43.8	0 12.5	8.5890	9.1580	2.48	3.60	4 1 44.5
5.2	20 41 10.43	41 2.63	18 56 15.8	56 44.6	8.5900	9.1614	2.46	3.59	5 1 41.5
6.2	20 42 6.51	41 58.78	18 52 46.2	53 15.1	8.5910	9.1644	2.44	3.59	6 1 38.5
7.2	20 43 2.72	42 55.01	18 49 15.1	49 44.1	8.5918	9.1675	2.42	3.59	7 1 35.5
8.2	20 43 59.04	43 51.35	18 45 42.5	46 11.5	8.5927	9.1708	2.40	3.58	8 1 32.5
9.2	20 44 55.47	44 47.80	18 42 8.3	42 37.4	8.5935	9.1738	2.37	3.58	9 1 29.5
10.2	20 45 52.00	45 44.36	18 38 32.6	39 1.8	8.5943	9.1771	2.34	3.57	10 1 26.5
11.2	20 46 48.63	46 41.02	18 34 55.4	35 24.7	8.5950	9.1799	2.32	3.57	11 1 23.6
12.2	20 47 45.34	47 37.76	18 31 16.8	31 46.1	8.5956	9.1826	2.29	3.56	12 1 20.6
13.2	20 48 42.13	48 34.57	18 27 36.8	28 6.2	8.5962	9.1854	2.26	3.56	13 1 17.6
14.2	20 49 38.99	49 31.46	18 23 55.3	24 24.7	8.5968	9.1882	2.23	3.55	14 1 14.6
15.2	20 50 35.93	50 28.43	18 20 12.5	20 41.9	8.5973	9.1909	2.20	3.54	15 1 11.6
16.2	20 51 32.93	51 25.46	18 16 28.3	16 57.7	8.5977	9.1933	2.17	3.54	16 1 8.6
17.2	20 52 29.98	52 22.55	18 12 42.8	13 12.2	8.5981	9.1961	2.14	3.53	17 1 5.6
18.2	20 53 27.09	53 19.69	18 8 55.9	9 25.3	8.5985	9.1988	2.11	3.52	18 1 2.6
19.2	20 54 24.25	54 16.88	18 5 7.7	5 37.1	8.5989	9.2012	2.08	3.51	19 0 59.7
20.2	20 55 21.45	55 14.11	18 1 18.1	1 47.6	8.5992	9.2037	+2.03	3.50	20 0 56.7
21.2	20 56 18.69	56 11.38	17 57 27.3	57 56.8	8.5995	9.2059		3.49	21 0 53.7
22.2	20 57 15.96	57 8.68	17 53 35.3	54 4.8	8.5998	9.2080		3.48	22 0 50.7
23.2	20 58 13.26	58 6.02	17 49 42.2	50 11.7	8.6000	9.2103		3.47	23 0 47.7
24.2	20 59 10.58	59 3.38	17 45 47.8	46 17.3	8.6002	9.2127		3.46	24 0 44.8
25.2	21 0 7.93	0 0.77	17 41 52.2	42 21.7	8.6003	9.2149		3.45	25 0 41.8
26.1	21 1 5.29	0 58.17	17 37 55.4	38 25.0	8.6003	9.2169		3.44	26 0 38.8
27.1	21 2 2.66	1 55.57	17 33 57.6	34 27.1	8.6003	9.2189		3.43	27 0 35.9
28.1	21 3 0.03	2 52.98	17 29 58.6	30 28.1	8.6003	9.2209		3.42	28 0 32.9
29.1	21 3 57.39	3 50.38	17 25 58.5	26 28.0	8.6003	9.2229		3.41	29 0 29.9
30.1	21 4 54.75	4 47.78	17 21 57.4	22 26.8	8.6002	9.2248		3.40	30 0 26.9
31.1	21 5 52.10	5 45.17	17 17 55.2	18 24.6	8.6002	9.2266		3.39	31 0 23.9
Feb. 1.1	21 6 49.44	6 42.55	17 13 52.0	14 21.3	8.6900	9.2284		3.38	1 0 20.9
2.1	21 7 46.75	7 39.90	17 9 47.8	10 17.1	8.5998	9.2302		3.37	2 0 17.9
3.1	21 8 44.02	8 37.21	17 5 42.7	6 12.0	8.5995	9.2317		3.36	3 0 15.0
4.1	21 9 41.25	9 34.48	17 1 36.8	2 6.0	8.5992	9.2332		3.34	4 0 12.0
5.1	21 10 38.45	10 31.72	16 57 30.0	57 59.0	8.5989	9.2348		3.33	5 0 9.0
6.1	21 11 35.60	11 28.91	16 53 22.3	53 51.2	8.5985	9.2363	−2.05	3.32	6 0 6.0
7.1	21 12 32.70	12 26.05	16 49 13.8	49 42.6	8.5981	9.2377	2.12	3.30	7 0 3.1
8.1	21 13 29.73	13 23.13	16 45 4.5	45 33.2	8.5976	9.2390	2.16	3.28	8 0 0.1
9.1	21 14 26.69	14 20.15	16 40 54.4	41 23.1	8.5970	9.2404	2.19	3.26	8 23 57.1
10.1	21 15 23.59	15 17.09	16 36 43.6	37 12.3	8.5964	9.2415	2.22	3.24	9 23 54.1
11.1	21 16 20.41	16 13.95	16 32 32.2	33 0.8	8.5958	9.2425	2.25	3.22	10 23 51.1
12.1	21 17 17.14	17 10.73	16 28 20.2	28 48.7	8.5952	9.2436	2.28	3.20	11 23 48.1
13.1	21 18 13.79	18 7.43	16 24 7.5	24 35.9	8.5945	9.2447	2.31	3.18	12 23 45.1
14.1	21 19 10.35	19 4.03	16 19 54.2	20 22.5	8.5938	9.2457	2.33	3.16	13 23 42.2
15.1	21 20 6.81	20 0.54	16 15 40.3	16 8.5	8.5931	9.2467	2.36	3.14	14 23 39.2
16.1	21 21 3.18	20 56.96	16 11 25.9	11 54.0	8.5923	9.2476	2.38	3.12	15 23 36.2
17.1	21 21 59.45	21 53.27	16 7 10.9	7 38.9	8.5914	9.2484	2.40	3.10	16 23 33.2
18.1	21 22 55.60	22 39.47	16 2 55.5	3 23.3	8.5906	9.2493	2.42	3.08	17 23 30.2
19.1	21 23 51.64	23 45.56	15 58 39.6	59 7.3	8.5898	9.2500	2.44	+3.04	18 23 27.2
20.1	21 24 47.57	24 41.54	15 54 23.3	54 50.9	8.5889	9.2505	2.46		19 23 24.2
21.1	21 25 43.37	25 37.40	15 50 16.7	50 34.1	8.5880	9.2512	2.48		20 23 21.2
22.1	21 26 39.05	26 33.12	15 45 49.7	46 17.0	8.5869	9.2518	2.50		21 23 18.2
23.1	21 27 34.60	27 28.72	15 41 32.3	41 59.5	8.5858	9.2524	2.52		22 23 15.1
24.1	21 28 30.02	28 24.19	15 37 14.6	37 41.7	8.5848	9.2530	2.54		23 23 12.1
25.1	21 29 25.31	29 19.53	15 32 56.6	33 23.6	8.5837	9.2534	2.56		24 23 9.1
26.1	21 30 20.45	30 14.72	15 28 38.4	29 5.3	8.5825	9.2537	2.58		25 23 6.1
27.1	21 31 15.44	31 9.76	15 24 20.1	24 46.8	8.5814	9.2539	2.59		26 23 3.1
28.1	21 32 10.28	32 4.65	15 20 1.7	20 28.2	8.5801	9.2541	2.60		27 23 0.0
29.1	21 33 4.96	32 59.39	15 15 43.1	16 9.4	8.5788	9.2544	2.61		28 22 57.0
30.1	21 33 59.48	33 53.96	−15 11 24.4	11 50.6	+8.5775	+9.2544	−2.62		29 22 54.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension. At Sidereal 0h.	Apparent Right Ascension. At Transit.	Apparent Declination. At Sidereal 0h.	Apparent Declination. At Transit.	Log of *a*. In R.A.	Log of *a*. In Dec.	Log of *b*. In R.A.	Log of *b*. In Dec.	Mean Solar Time of Meridian Transit.
d	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1.1	21 33 4.96	32 59.39	−15 15 43.1	16 9.4	+8.5788	+9.2544	−2.61		0 22 57.0
2.1	21 33 59.48	33 53.96	15 11 24.4	11 50.6	8.5775	9.2544	2.62		1 22 54.0
3.1	21 34 53.83	34 48.37	15 7 5.7	7 31.7	8.5762	9.2544	2.63		2 22 51.0
4.0	21 35 48.01	35 42.60	15 2 47.0	3 12.9	8.5749	9.2543	2.64		3 22 48.0
5.0	21 36 42.01	36 36.65	14 58 28.4	58 54.1	8.5734	9.2543	2.65		4 22 44.9
6.0	21 37 35.83	37 30.52	14 54 9.8	54 35.3	8.5718	9.2542	2.66		5 22 41.9
7.0	21 38 29.45	38 24.19	14 49 51.3	50 16.7	8.5702	9.2539	2.67		6 22 38.8
8.0	21 39 22.87	39 17.67	14 45 33.0	45 58.2	8.5686	9.2536	2.68		7 22 35.8
9.0	21 40 16.10	40 10.94	14 41 14.9	41 39.9	8.5669	9.2532	2.69		8 22 32.8
10.0	21 41 9.11	41 4.00	14 36 57.0	37 21.9	8.5652	9.2528	2.70		9 22 29.7
11.0	21 42 1.92	41 57.86	14 32 39.4	33 4.1	8.5634	9.2524	2.70		10 22 26.6
12.0	21 42 54.51	42 49.50	14 28 22.1	28 46.6	8.5616	9.2518	2.71		11 22 23.6
13.0	21 43 46.88	43 41.91	14 24 5.2	24 29.5	8.5598	9.2511	2.72		12 22 20.5
14.0	21 44 39.02	44 34.10	14 19 48.7	20 12.8	8.5579	9.2504	2.73		13 22 17.5
15.0	21 45 30.93	45 26.07	14 15 32.7	15 56.6	8.5559	9.2497	2.74		14 22 14.4
16.0	21 46 22.60	46 17.80	14 11 17.0	11 40.7	8.5539	9.2489	2.74		15 22 11.3
17.0	21 47 14.04	47 9.30	14 7 1.8	7 25.3	8.5519	9.2480	2.75	−3.03	16 22 8.2
18.0	21 48 5.24	48 0.56	14 2 47.2	3 10.5	8.5498	9.2469	2.76	3.09	17 22 5.1
19.0	21 48 56.19	48 51.57	13 58 33.2	58 56.3	8.5477	9.2458	2.77	3.14	18 22 2.1
20.0	21 49 46.90	49 42.34	13 54 19.8	54 42.7	8.5456	9.2448	2.78	3.18	19 21 59.0
21.0	21 50 37.36	50 32.85	13 50 7.0	50 29.7	8.5435	9.2437	2.78	3.22	20 21 55.9
22.0	21 51 27.56	51 23.10	13 45 54.9	46 17.3	8.5412	9.2425	2.79	3.25	21 21 52.8
23.0	21 52 17.50	52 13.09	13 41 43.5	42 5.7	8.5389	9.2413	2.80	3.28	22 21 49.7
24.0	21 53 7.17	53 2.81	13 37 32.9	37 54.9	8.5366	9.2399	2.81	3.30	23 21 46.6
25.0	21 53 56.56	53 52.26	13 33 23.1	33 44.9	8.5342	9.2385	2.82	3.32	24 21 43.5
26.0	21 54 45.69	54 41.44	13 29 14.2	29 35.8	8.5317	9.2370	2.82	3.34	25 21 40.4
27.0	21 55 34.54	55 30.34	13 25 6.1	25 27.5	8.5292	9.2355	2.83	3.36	26 21 37.3
28.0	21 56 23.10	56 18.95	13 20 58.9	21 20.1	8.5266	9.2339	2.84	3.38	27 21 34.2
29.0	21 57 11.36	57 7.26	13 16 52.7	17 13.7	8.5239	9.2321	2.85	3.40	28 21 31.1
30.0	21 57 59.33	57 55.28	13 12 47.6	13 8.3	8.5212	9.2302	2.86	3.42	29 21 27.9
31.0	21 58 46.99	58 42.99	13 8 43.5	9 4.0	8.5185	9.2282	2.86	3.43	30 21 24.8
Apr. 1.0	21 59 34.35	59 30.41	13 4 40.5	5 0.8	8.5156	9.2261	2.87	3.45	31 21 21.7
2.0	22 0 21.39	0 17.50	13 0 38.6	0 58.6	8.5126	9.2239	2.88	3.46	1 21 18.5
3.0	22 1 8.11	1 4.27	12 56 38.0	56 57.7	8.5096	9.2216	2.89	3.48	2 21 15.3
4.0	22 1 54.50	1 50.72	12 52 38.7	52 58.2	8.5066	9.2193	2.90	3.49	3 21 12.1
5.0	22 2 40.57	2 36.84	12 48 40.6	49 0.0	8.5034	9.2170	2.90	3.50	4 21 9.0
6.0	22 3 26.30	3 22.62	12 44 43.9	45 3.1	8.5002	9.2145	2.91	3.52	5 21 5.8
7.0	22 4 11.69	4 8.06	12 40 48.6	41 7.5	8.4969	9.2120	2.92	3.53	6 21 2.6
8.0	22 4 56.73	4 53.15	12 36 54.7	37 13.3	8.4936	9.2093	2.92	3.54	7 20 59.4
8.9	22 5 41.42	5 37.89	12 33 2.2	33 20.6	8.4902	9.2065	2.93	3.55	8 20 56.2
9.9	22 6 25.76	6 22.28	12 29 11.3	29 29.5	8.4867	9.2037	2.93	3.56	9 20 53.0
10.9	22 7 9.73	7 6.30	12 25 21.9	25 39.9	8.4831	9.2008	2.94	3.58	10 20 49.8
11.9	22 7 53.34	7 49.96	12 21 34.1	21 51.9	8.4794	9.1978	2.95	3.59	11 20 46.6
12.9	22 8 36.58	8 33.25	12 17 47.9	18 5.5	8.4754	9.1945	2.96	3.60	12 20 43.4
13.9	22 9 19.44	9 16.16	12 14 3.5	14 20.8	8.4717	9.1911	2.97	3.61	13 20 40.2
14.9	22 10 1.92	9 58.68	12 10 20.8	10 37.8	8.4678	9.1877	2.97	3.62	14 20 37.0
15.9	22 10 44.01	10 40.82	12 6 39.8	6 56.5	8.4638	9.1842	2.98	3.63	15 20 33.8
16.9	22 11 25.72	11 22.58	12 3 0.6	3 17.0	8.4597	9.1808	2.99	3.64	16 20 30.6
17.9	22 12 7.03	12 3.94	11 59 23.2	59 39.3	8.4555	9.1771	2.99	3.65	17 20 27.3
18.9	22 12 47.94	12 44.90	11 55 47.7	56 3.6	8.4513	9.1733	3.00	3.66	18 20 24.0
19.9	22 13 28.45	13 25.46	11 52 14.1	52 29.8	8.4470	9.1684	3.00	3.67	19 20 20.8
20.9	22 14 8.56	14 5.62	11 48 42.5	48 58.0	8.4426	9.1652	3.01	3.68	20 20 17.6
21.9	22 14 48.26	14 45.36	11 45 13.0	45 28.2	8.4381	9.1608	3.01	3.69	21 20 14.3
22.9	22 15 27.54	15 24.69	11 41 45.5	42 0.5	8.4334	9.1565	3.02	3.70	22 20 11.0
23.9	22 16 6.39	16 3.59	11 38 20.0	38 34.8	8.4285	9.1521	3.02	3.71	23 20 7.7
24.9	22 16 44.81	16 42.06	11 34 56.7	35 11.3	8.4236	9.1474	3.03	3.72	24 20 4.4
25.9	22 17 22.80	17 20.10	11 31 35.7	31 50.1	8.4187	9.1425	3.03	3.73	25 20 1.1
26.9	22 18 0.35	17 57.70	11 28 17.0	28 31.1	8.4136	9.1375	3.04	3.74	26 19 57.8
27.9	22 18 37.45	18 34.85	11 25 0.5	25 14.3	8.4084	9.1323	3.04	3.75	27 19 54.5
28.9	22 19 14.09	19 11.54	11 21 46.4	21 59.9	8.4029	9.1270	3.05	3.76	28 19 51.1
29.9	22 19 50.28	19 47.77	11 18 34.7	18 48.0	8.3974	9.1215	3.05	3.76	29 19 47.8
30.9	22 20 26.00	20 23.54	−11 15 25.5	15 38.5	+8.3917	+9.1160	−3.06	−3.77	30 19 44.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
May 1.9	22 21 1.24	20 58.83	−11 12 18.7	12 31.5	+8.3859	+9.1100	−3.06	−3.78	1 19 41.1
2.9	22 21 36.01	21 33.64	11 9 14.5	9 27.0	8.3798	9.1038	3.07	3.79	2 19 37.8
3.9	22 22 10.29	22 7.96	11 6 12.9	6 25.1	8.3736	9.0076	3.07	3.80	3 19 34.5
4.9	22 22 44.08	22 41.80	11 3 14.0	3 25.9	8.3671	9.0913	3.08	3.80	4 19 31.1
5.9	22 23 17.37	23 15.14	11 0 17.7	0 29.4	8.3605	9.0846	3.08	3.81	5 19 27.7
6.9	22 23 50.15	23 47.97	10 57 24.2	57 35.7	8.3538	9.0776	3.09	3.82	6 19 24.3
7.9	22 24 22.43	24 20.29	10 54 33.4	54 44.7	8.3468	9.0703	3.09	3.83	7 19 20.9
8.9	22 24 54.19	24 52.09	10 51 45.5	51 56.5	8.3399	9.0630	3.10	3.84	8 19 17.5
9.9	22 25 25.44	25 23.39	10 49 0.4	49 11.2	8.3327	9.0554	3.10	3.84	9 19 14.1
10.9	22 25 56.16	25 54.16	10 46 18.3	46 28.8	8.3252	9.0475	3.11	3.85	10 19 10.7
11.9	22 26 26.35	26 24.40	10 43 39.1	43 49.3	8.3176	9.0395	3.11	3.86	11 19 7.2
12.9	22 26 56.01	26 54.10	10 41 2.9	41 12.8	8.3098	9.0311	3.12	3.87	12 19 3.8
13.9	22 27 25.14	27 23.28	10 38 29.7	38 39.4	8.3019	9.0226	3.12	3.88	13 19 0.4
14.9	22 27 53.73	27 51.91	10 35 59.6	36 9.1	8.2937	9.0137	3.13	3.88	14 18 56.9
15.8	22 28 21.77	28 19.98	10 33 32.6	33 41.8	8.2852	9.0045	3.13	3.89	15 18 53.4
16.8	22 28 49.25	28 47.51	10 31 8.7	31 17.7	8.2764	8.9951	3.14	3.90	16 18 49.9
17.8	22 29 16.17	29 14.48	10 28 48.0	28 56.7	8.2672	8.9852	3.14	3.90	17 18 46.4
18.8	22 29 42.53	29 40.88	10 26 30.5	26 38.9	8.2577	8.9748	3.15	3.91	18 18 42.9
19.8	22 30 8.32	30 6.72	10 24 16.4	24 24.5	8.2481	8.9641	3.15	3.91	19 18 39.4
20.8	22 30 33.54	30 31.99	10 22 5.5	22 13.4	8.2382	8.9529	3.15	3.92	20 18 35.9
21.8	22 30 58.17	30 56.67	10 19 57.9	20 5.7	8.2279	8.9413	3.16	3.93	21 18 32.4
22.8	22 31 22.22	31 20.76	10 17 53.8	18 1.3	8.2172	8.9290	3.16	3.93	22 18 28.9
23.8	22 31 45.68	31 44.26	10 15 53.2	16 0.4	8.2061	8.9165	3.16	3.94	23 18 25.4
24.8	22 32 8.53	32 7.16	10 13 56.1	14 3.0	8.1948	8.9034	3.17	3.94	24 18 21.8
25.8	22 32 30.78	32 29.46	10 12 2.5	12 9.2	8.1831	8.8899	3.17	3.94	25 18 18.2
26.8	22 32 52.43	32 51.15	10 10 12.5	10 19.0	8.1708	8.8758	3.17	3.95	26 18 14.6
27.8	22 33 13.46	33 12.22	10 8 26.1	8 32.4	8.1580	8.8611	3.18	3.95	27 18 11.0
28.8	22 33 33.87	33 32.67	10 6 43.3	6 49.4	8.1448	8.8453	3.18	3.95	28 18 7.4
29.8	22 33 53.65	33 52.49	10 5 4.3	5 10.1	8.1307	8.8282	3.19	3.96	29 18 3.8
30.8	22 34 12.79	34 11.67	10 3 29.1	3 34.6	8.1163	8.8115	3.19	3.96	30 18 0.2
31.8	22 34 31.28	34 30.20	10 1 57.7	2 2.9	8.1009	8.7934	3.20	3.97	31 17 56.6
June 1.8	22 34 49.13	34 48.09	10 0 30.1	0 35.0	8.0851	8.7746	3.20	3.97	1 17 53.0
2.8	22 35 6.33	35 5.33	9 59 6.4	59 11.0	8.0685	8.7544	3.20	3.98	2 17 49.4
3.8	22 35 22.87	35 21.91	9 57 46.5	57 50.9	8.0511	8.7331	3.21	3.98	3 17 45.7
4.8	22 35 38.74	35 37.83	9 56 30.5	56 34.8	8.0330	8.7108	3.21	3.98	4 17 42.0
5.8	22 35 53.95	35 53.09	9 55 18.4	55 22.5	8.0140	8.6867	3.21	3.99	5 17 38.3
6.8	22 36 8.49	36 7.67	9 54 10.4	54 14.2	7.9939	8.6611	3.22	3.99	6 17 34.6
7.8	22 36 22.37	36 21.58	9 53 6.4	53 10.0	7.9729	8.6340	3.22	4.00	7 17 30.9
8.8	22 36 35.57	36 34.81	9 52 6.4	52 9.8	7.9506	8.6050	3.22	4.00	8 17 27.2
9.8	22 36 48.08	36 47.37	9 51 10.5	51 13.7	7.9268	8.5732	3.23	4.00	9 17 23.5
10.8	22 36 59.91	36 59.25	9 50 18.7	50 21.6	7.9019	8.5388	3.23	4.01	10 17 19.8
11.8	22 37 11.06	37 10.44	9 49 31.0	49 33.6	7.8750	8.5015	3.23	4.01	11 17 16.1
12.8	22 37 21.52	37 20.95	9 48 47.4	48 49.8	7.8463	8.4607	3.24	4.01	12 17 12.4
13.8	22 37 31.29	37 30.76	9 48 7.9	48 10.1	7.8152	8.4145	3.24	4.02	13 17 8.6
14.8	22 37 40.37	37 39.87	9 47 32.6	47 34.5	7.7816	8.3627	3.24	4.02	14 17 4.8
15.8	22 37 48.75	37 48.29	9 47 1.4	47 3.1	7.7458	8.3040	3.24	4.02	15 17 1.0
16.8	22 37 56.42	37 56.01	9 46 34.5	46 35.9	7.7061	8.2361	3.25	4.02	16 16 57.2
17.8	22 38 3.39	38 3.02	9 46 11.8	46 13.0	7.6618	8.1555	3.25	4.03	17 16 53.4
18.8	22 38 9.65	38 9.32	9 45 53.4	45 54.3	7.6125	8.0538	3.25	4.03	18 16 49.6
19.8	22 38 15.20	38 14.91	9 45 39.2	45 39.8	7.5559	7.9244	3.25	4.03	19 16 45.8
20.8	22 38 20.03	38 19.78	9 45 20.2	45 20.6	7.4919	7.7392	3.25	4.03	20 16 41.9
21.7	22 38 24.15	38 23.94	9 45 23.5	45 23.7	7.4156	+7.3979	3.26	4.04	21 16 38.0
22.7	22 38 27.55	38 27.38	9 45 22.1	45 22.1	7.3230	−6.7446	3.26	4.04	22 16 34.1
23.7	22 38 30.22	38 30.10	9 45 25.1	45 24.8	7.2052	7.5492	3.26	4.04	23 16 30.2
24.7	22 38 32.17	38 32.10	9 45 32.4	45 31.9	7.0403	7.8147	3.26	4.04	24 16 26.3
25.7	22 38 33.39	38 33.37	9 45 44.0	45 43.3	6.8761	7.9715	3.26	4.04	25 16 22.4
26.7	22 38 33.89	38 33.91	9 46 0.0	45 59.0	+5.9555	8.0903	3.26	4.04	26 16 18.5
27.7	22 38 33.66	38 33.72	9 46 20.3	46 19.1	−6.6198	8.1918	3.26	4.04	27 16 14.6
28.7	22 38 32.70	38 32.80	9 46 44.9	46 43.5	6.9687	8.2697	3.26	4.04	28 16 10.6
29.7	22 38 31.00	38 31.14	9 47 13.9	47 12.2	7.1576	8.3344	3.26	4.04	29 16 6.6
30.7	22 38 28.57	38 28.75	9 47 47.2	47 45.3	7.2872	8.3918	3.26	4.03	30 16 2.6
31.7	22 38 25.41	38 25.63	− 9 48 24.8	48 22.6	−7.3804	−8.4415	−3.26	−4.03	31 15 58.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
July 1.7	22 38 25.41	38 25.63	− 9 48 24.8	48 22.6	−7.3894	−8.4415	−3.26	−4.03	1 15 58.6
2.7	22 38 21.51	38 21.78	9 49 6.6	49 4.2	7.4710	8.4851	3.26	4.03	2 15 54.6
3.7	22 38 16.89	38 17.20	9 49 52.7	49 50.0	7.5388	8.5246	3.26	4.03	3 15 50.6
4.7	22 38 11.55	38 11.90	9 50 43.0	50 40.1	7.5975	8.5609	3.26	4.03	4 15 46.6
5.7	22 38 5.49	38 5.88	9 51 37.6	51 34.4	7.6491	8.5944	3.25	4.03	5 15 42.6
6.7	22 37 58.71	37 59.14	9 52 36.3	52 32.9	7.6953	8.6248	3.25	4.02	6 15 38.5
7.7	22 37 51.21	37 51.68	9 53 39.1	53 35.5	7.7365	8.6538	2.25	4.02	7 15 34.5
8.7	22 37 43.01	37 43.51	9 54 46.1	54 42.2	7.7736	8.6811	3.25	4.02	8 15 30.4
9.7	22 37 34.11	37 34.64	9 55 57.3	55 53.1	7.8077	8.7061	3.25	4.02	9 15 26.4
10.7	22 37 24.50	37 25.07	9 57 12.5	57 8.1	7.8394	8.7294	3.25	4.01	10 15 22.3
11.7	22 37 14.20	37 14.80	9 58 31.7	58 27.0	7.8690	8.7512	3.24	4.01	11 15 18.2
12.7	22 37 3.20	37 3.84	9 59 54.9	59 49.9	7.8962	8.7720	3.24	4.01	12 15 14.1
13.7	22 36 51.51	36 52.19	10 1 22.0	1 16.8	7.9218	8.7915	3.24	4.00	13 15 10.0
14.7	22 36 39.14	36 39.85	10 2 52.9	2 47.6	7.9457	8.8096	3.24	4.00	14 15 5.9
15.7	22 36 26.09	36 26.84	10 4 27.7	4 22.2	7.9684	8.8270	3.24	3.99	15 15 1.7
16.7	22 36 12.37	36 13.16	10 6 6.3	6 0.5	7.9895	8.8437	3.23	3.99	16 14 57.5
17.7	22 35 57.99	35 58.82	10 7 48.7	7 42.6	8.0095	8.8594	3.23	3.98	17 14 53.4
18.7	22 35 42.94	35 43.82	10 9 34.7	9 28.4	8.0285	8.8743	3.23	3.97	18 14 49.2
19.7	22 35 27.24	35 28.17	10 11 24.3	11 17.8	8.0465	8.8884	3.22	3.96	19 14 45.0
20.7	22 35 10.89	35 11.87	10 13 17.4	13 10.7	8.0635	8.9023	3.21	3.95	20 14 40.8
21.7	22 34 53.91	34 54.94	10 15 14.1	15 7.2	8.0793	8.9150	3.20	3.94	21 14 36.6
22.7	22 34 36.31	34 37.38	10 17 14.2	17 7.1	8.0947	8.9272	3.19	3.93	22 14 32.4
23.7	22 34 18.10	34 19.21	10 19 17.7	19 10.4	8.1093	8.9388	3.18	3.92	23 14 28.2
24.7	22 33 59.28	34 0.43	10 21 24.5	21 17.0	8.1230	8.9502	3.17	3.91	24 14 23.9
25.7	22 33 39.86	33 41.05	10 23 34.6	23 26.8	8.1363	8.9612	3.16	3.90	25 14 19.6
26.7	22 33 19.86	33 21.09	10 25 47.8	25 39.8	8.1489	8.9713	3.15	3.89	26 14 15.3
27.6	22 32 59.29	33 0.55	10 28 4.0	27 55.8	8.1610	8.9809	3.14	3.87	27 14 11.1
28.6	22 32 38.16	32 39.45	10 30 23.2	30 14.8	8.1724	8.9898	3.13	3.85	28 14 6.8
29.6	22 32 16.47	32 17.80	10 32 45.2	32 36.6	8.1832	8.9984	3.12	3.84	29 14 2.5
30.6	22 31 54.25	31 55.62	10 35 10.0	35 1.2	8.1933	9.0063	3.11	3.82	30 13 58.2
31.6	22 31 31.52	31 32.92	10 37 37.4	37 28.4	8.2031	9.0140	3.10	3.80	31 13 53.9
Aug. 1.6	22 31 8.28	31 9.72	10 40 7.3	39 58.1	8.2125	9.0212	3.08	3.78	1 13 49.6
2.6	22 30 44.55	30 46.03	10 42 39.7	42 30.3	8.2215	9.0280	3.07	3.76	2 13 45.3
3.6	22 30 20.34	30 21.86	10 45 14.5	45 4.9	8.2297	9.0344	3.05	3.74	3 13 41.0
4.6	22 29 55.68	29 57.24	10 47 51.5	47 41.8	8.2375	9.0406	3.03	3.72	4 13 36.6
5.6	22 29 30.59	29 32.19	10 50 30.6	50 20.7	8.2450	9.0462	3.01	3.70	5 13 32.2
6.6	22 29 5.07	29 6.71	10 53 11.7	53 1.6	8.2520	9.0511	2.99	3.67	6 13 27.9
7.6	22 28 39.15	28 40.83	10 55 54.6	55 44.3	8.2585	9.0559	2.97	3.64	7 13 23.6
8.6	22 28 12.85	28 14.56	10 58 39.3	58 28.8	8.2648	9.0607	2.95	3.60	8 13 19.2
9.6	22 27 46.17	27 47.92	11 1 25.7	1 15.0	8.2707	9.0648	2.92	3.56	9 13 14.8
10.6	22 27 19.14	27 20.92	11 4 13.6	4 2.7	8.2762	9.0685	2.90	3.52	10 13 10.4
11.6	22 26 51.79	26 53.60	11 7 2.9	6 51.9	8.2809	9.0720	2.88	3.48	11 13 6.0
12.6	22 26 24.12	26 25.96	11 9 53.5	9 42.4	8.2856	9.0753	2.86	3.44	12 13 1.6
13.6	22 25 56.18	25 58.03	11 12 45.3	12 34.1	8.2903	9.0788	2.83	3.40	13 12 57.2
14.6	22 25 27.96	25 29.83	11 15 38.1	15 26.8	8.2943	9.0803	2.80	3.35	14 12 52.8
15.6	22 24 59.48	25 1.36	11 18 31.8	18 20.4	8.2980	9.0823	2.77	3.29	15 12 48.4
16.6	22 24 30.77	24 32.66	11 21 26.3	21 14.8	8.3015	9.0843	2.74	3.21	16 12 44.0
17.6	22 24 1.84	24 3.74	11 24 21.5	24 9.9	8.3046	9.0861	2.71	−3.11	17 12 39.6
18.6	22 23 32.72	23 34.63	11 27 17.3	27 5.6	8.3074	9.0871	2.67		18 12 35.2
19.6	22 23 3.41	23 5.34	11 30 13.5	30 1.6	8.3099	9.0881	2.62		19 12 30.8
20.6	22 22 33.94	22 35.89	11 33 10.0	32 57.9	8.3120	9.0888	2.55		20 12 26.3
21.6	22 22 4.34	22 6.31	11 36 6.7	35 54.5	8.3139	9.0891	2.46		21 12 21.9
22.6	22 21 34.62	21 36.61	11 39 3.5	38 51.2	8.3156	9.0888	−2.33		22 12 17.5
23.6	22 21 4.80	21 6.82	11 42 0.0	41 47.7	8.3167	9.0883			23 12 13.1
24.6	22 20 34.91	20 36.96	11 44 56.3	44 44.0	8.3176	9.0876			24 12 8.7
25.6	22 20 4.97	20 7.04	11 47 52.3	47 40.0	8.3182	9.0866			25 12 4.2
26.6	22 19 35.01	19 37.10	11 50 47.9	50 35.6	8.3183	9.0853		+3.20	26 11 59.8
27.6	22 19 5.05	19 7.16	11 53 42.8	53 30.5	8.3182	9.0836		3.30	27 11 55.3
28.6	22 18 35.11	18 37.24	11 56 36.9	56 24.6	8.3176	9.0813		3.38	28 11 50.9
29.6	22 18 5.22	18 7.36	11 59 30.1	59 17.9	8.3167	9.0791	+2.29	3.43	29 11 46.5
30.6	22 17 35.41	17 37.55	12 2 22.4	2 10.2	8.3156	9.0768	2.39	3.47	30 11 42.0
31.6	22 17 5.69	17 7.84	−12 5 13.6	5 1.4	−8.3141	−9.0737	+2.47	+3.51	31 11 37.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1.6	22 16 36.08	16 38.24	−12 8 3.5	7 51.3	−8.3121	−9.0700	+2.54	+3.54	1 11 33.2
2.5	22 16 6.62	16 8.77	12 10 51.9	10 39.7	8.3099	9.0661	2.60	3.57	2 11 28.7
3.5	22 15 37 32	15 39.47	12 13 38.7	13 26.6	8.3071	9.0620	2.65	3.61	3 11 24.3
4.5	22 15 8.22	15 10.36	12 16 23.9	16 11.9	8.3041	9.0577	2.70	3.65	4 11 19.9
5.5	22 14 39.33	14 41.46	12 19 7.4	18 55.5	8.3010	9.0527	2.74	3.69	5 11 15.5
6.5	22 14 10.66	14 12.78	12 21 48.9	21 37.2	8.2973	9.0473	2.78	3.72	6 11 11.1
7.5	22 13 42.24	13 44.35	12 24 28.4	24 16.8	8.2934	9.0417	2.82	3.75	7 11 6.7
8.5	22 13 14.09	13 16.18	12 27 5.8	26 54.3	8.2891	9.0358	2.86	3.77	8 11 2.3
9.5	22 12 46.23	12 48.30	12 29 41.1	29 29.7	8.2844	9.0297	2.89	3.79	9 10 57.9
10.5	22 12 18.68	12 20.73	12 32 14.1	32 2.8	8.2794	9.0228	2.92	3.81	10 10 53.5
11.5	22 11 51.46	11 53.50	12 34 44.6	34 33.4	8.2739	9.0157	2.95	3.82	11 10 49.1
12.5	22 11 24.59	11 26.61	12 37 12.6	37 1.6	8.2681	9.0084	2.98	3.84	12 10 44.7
13.5	22 10 58.09	11 0.09	12 39 38.1	39 27.2	8.2619	9.0006	3.01	3.86	13 10 40.3
14.5	22 10 31.97	10 33.95	12 42 0.9	41 50.1	8.2554	8.9926	3.03	3.87	14 10 35.9
15.5	22 10 6.25	10 8.21	12 44 21.0	44 10.3	8.2484	8.9838	3.05	3.88	15 10 31.6
16.5	22 9 40.96	9 42.89	12 46 38.2	46 27.6	8.2410	8.9742	3.07	3.89	16 10 27.3
17.5	22 9 16.10	9 18.01	12 48 52.4	48 42.0	8.2332	8.9645	3.09	3.90	17 10 22.9
18.5	22 8 51.70	8 53.59	12 51 3.6	50 53.4	8.2250	8.9546	3.11	3.91	18 10 18.6
19.5	22 8 27.77	8 29.63	12 53 11.7	53 1.7	8.2160	8.9441	3.12	3.92	19 10 14.3
20.5	22 8 4.34	8 6.16	12 55 16.6	55 6.9	8.2069	8.9325	3.13	3.93	20 10 10.0
21.5	22 7 41.42	7 43.20	12 57 18.2	57 8.8	8.1981	8.9208	3.14	3.94	21 10 5.7
22.5	22 7 19.03	7 20.77	12 59 16.5	59 7.4	8.1868	8.9087	3.16	3.95	22 10 1.4
23.5	22 6 57.18	6 58.88	13 1 11.4	1 2.4	8.1758	8.8955	3.17	3.96	23 9 57.1
24.5	22 6 35.88	6 37.55	13 3 2.7	2 54.1	8.1642	8.8815	3.18	3.97	24 9 52.8
25.5	22 6 15.16	6 16.78	13 4 50.5	4 42.2	8.1518	8.8669	3.19	3.98	25 9 48.5
26.5	22 5 55.03	5 56.60	13 6 34.7	6 26.7	8.1392	8.8519	3.20	3.98	26 9 44.3
27.5	22 5 35.50	5 37.03	13 8 15.3	8 7.5	8.1256	8.8359	3.21	3.98	27 9 40.0
28.5	22 5 16 59	5 18.07	13 9 52.1	9 44.6	8.1115	8.8189	3.21	3.99	28 9 35.7
29.5	22 4 58.31	4 59.75	13 11 25.1	11 17.9	8.0962	8.8011	3.22	3.99	29 9 31.5
30.5	22 4 40.68	4 42.07	13 12 54.3	12 47.4	8.0801	8.7826	3.22	3.99	30 9 27.3
Oct. 1.5	22 4 23.70	4 25.05	13 14 19.6	14 13.0	8.0630	8.7628	3.23	3.99	1 9 23.1
2.5	22 4 7.39	4 8.69	13 15 40.9	15 34.6	8.0450	8.7420	3.23	3.99	2 9 18.9
3.5	22 3 51.76	3 53.01	13 16 58.3	16 52.2	8.0256	8.7195	3.24	4.00	3 9 14.7
4.5	22 3 36.82	3 38.01	13 18 11.6	18 5.8	8.0057	8.6953	3.24	4.00	4 9 10.5
5.5	22 3 22.58	3 23.71	13 19 20.9	19 15.3	7.9844	8.6690	3.25	4.00	5 9 6.3
6.5	22 3 9.04	3 10.11	13 20 26.0	20 20.8	7.9618	8.6416	3.25	4.00	6 9 2.1
7.5	22 2 56.21	2 57.22	13 21 27.0	21 22.2	7.9378	8.6125	3.25	4.00	7 8 57.9
8.5	22 2 44.10	2 45.06	13 22 23.9	22 19.4	7.9117	8.5812	3.26	4.00	8 8 53.8
9.4	22 2 32.72	2 33.62	13 23 16.8	23 12.6	7.8838	8.5475	3.26	4.01	9 8 49.7
10.4	22 2 22.07	2 22.91	13 24 5.5	24 1.6	7.8535	8.5109	3.26	4.01	10 8 45.6
11.4	22 2 12.16	2 12.94	13 24 49.9	24 46.4	7.8210	8.4690	3.27	4.01	11 8 41.5
12.4	22 2 2.99	2 3.71	13 25 30.2	25 27.0	7.7861	8.4225	3.27	4.01	12 8 37.4
13.4	22 1 54.57	1 55.23	13 26 6.2	26 3.4	7.7474	8.3718	3.27	4.02	13 8 33.3
14.4	22 1 46.90	1 47.50	13 26 38.0	26 35.6	7.7049	8.3129	3.27	4.02	14 8 29.3
15.4	22 1 39.98	1 40.52	13 27 5.5	27 3.5	7.6572	8.2464	3.28	4.02	15 8 25.2
16.4	22 1 33.82	1 34.30	13 27 28.8	27 27.2	7.6035	8.1679	3.28	4.02	16 8 21.2
17.4	22 1 28.42	1 28.84	13 27 47.9	27 46.7	7.5423	8.0720	3.28	4.02	17 8 17.2
18.4	22 1 23.78	1 24.14	13 28 2.8	28 1.9	7.4710	7.9488	3.28	4.02	18 8 13.2
19.4	22 1 19.91	1 20.21	13 28 13.5	28 12.9	7.3844	7.7761	3.28	4.02	19 8 9.2
20.4	22 1 16.82	1 18.05	13 28 19.9	28 19.6	7.2746	−7.4751	3.28	4.02	20 8 5.2
21.4	22 1 14.50	1 14.67	13 28 22.0	28 22.1	7.1272	+5.8416	3.28	4.02	21 8 1.2
22.4	22 1 12.95	1 13.06	13 28 19.8	28 20.3	6.9023	7.4751	3.28	4.02	22 7 57.2
23.4	22 1 12.19	1 12.24	13 28 13.4	28 14.2	−6.4098	7.7710	3.28	4.02	23 7 53.3
24.4	22 1 12.21	1 12.19	13 28 2.7	28 3.8	+6.4544	7.9488	3.28	4.01	24 7 49.4
25.4	22 1 13.01	1 12.93	13 27 47.7	27 49.1	6.9171	8.0746	3.28	4.01	25 7 45.5
26.4	22 1 14.59	1 14.45	13 27 28.4	27 30.1	7.1383	8.1720	3.28	4.01	26 7 41.6
27.4	22 1 16.96	1 16.75	13 27 4.8	27 6.9	7.2825	8.2498	3.28	4.01	27 7 37.7
28.4	22 1 20.11	1 19.83	13 26 37.0	26 39.4	7.3906	8.3173	3.28	4.01	28 7 33.8
29.4	22 1 24.04	1 23.69	13 26 4.9	26 7.6	7.4771	8.3756	3.27	4.01	29 7 29.9
30.4	22 1 28.75	1 28.33	13 25 28.5	25 31.6	7.5483	8.4271	3.27	4.00	30 7 26.1
31.4	22 1 34.23	1 33.75	13 24 47.8	24 51.3	7.6095	8.4720	3.27	4.00	31 7 22.3
32.4	22 1 40.48	1 39.94	−13 24 3.0	24 6.8	+7.6631	+8.5128	+3.27	+4.00	32 7 18.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1.4	22 1 40.48	1 39.94	−13 24 3.0	24 6.8	+7.6631	+8.5128	+3.27	+4.00	1 7 18.4
2.4	22 1 47.50	1 46.90	13 23 14.1	23 18.2	7.7108	8.5500	3.27	4.00	2 7 14.6
3.4	22 1 55.30	1 54.64	13 22 20.9	22 25.4	7.7538	8.5851	3.27	4.00	3 7 10.8
4.4	22 2 3.86	2 3.14	13 21 23.5	21 28.4	7.7929	8.6161	3.26	3.99	4 7 7.0
5.4	22 2 13.18	2 12.39	13 20 22.1	20 27.3	7.8284	8.6444	3.26	3.99	5 7 3.2
6.4	22 2 23.26	2 22.40	13 19 16.6	19 22.2	7.8611	8.6709	3.26	3.99	6 6 59.5
7.4	22 2 34.08	2 33.17	13 18 7.1	18 13.0	7.8908	8.6965	3.25	3.99	7 6 55.7
8.4	22 2 45.65	2 44.68	13 16 53.5	16 59.7	7.9186	8.7207	3.25	3.98	8 6 51.9
9.4	22 2 57.96	2 56.93	13 15 35.8	15 42.3	7.9448	8.7431	3.25	3.98	9 6 48.2
10.4	22 3 11.01	3 9.92	13 14 14.1	14 20.9	7.9690	8.7643	3.24	3.98	10 6 44.5
11.4	22 3 24.78	3 23.64	13 12 48.4	12 55.6	7.9917	8.7841	3.24	3.98	11 6 40.8
12.4	22 3 39.26	3 38.07	13 11 18.8	11 26.3	8.0134	8.8035	3.23	3.98	12 6 37.1
13.4	22 3 54.47	3 53.22	13 9 45.2	9 53.1	8.0339	8.8216	3.23	3.97	13 6 33.4
14.4	22 4 10.40	4 9.10	13 8 7.8	8 15.9	8.0535	8.8390	3.23	3.97	14 6 29.7
15.3	22 4 27.04	4 25.68	13 6 26.5	6 34.8	8.0719	8.8556	3.22	3.97	15 6 26.0
16.3	22 4 44.37	4 42.95	13 4 41.2	4 49.9	8.0891	8.8714	3.22	3.97	16 6 22.4
17.3	22 5 2.40	5 0.93	13 2 52.2	3 1.1	8.1057	8.8869	3.22	3.97	17 6 18.8
18.3	22 5 21.12	5 19.60	13 0 59.3	1 8.5	8.1217	8.9015	3.21	3.96	18 6 15.2
19.3	22 5 40.53	5 38.96	12 59 2.6	59 12.1	8.1372	8.9158	3.21	3.96	19 6 11.6
20.3	22 6 0.62	5 59.00	12 57 2.1	57 11.9	8.1518	8.9290	3.21	3.96	20 6 8.0
21.3	22 6 21.39	6 19.72	12 54 57.9	55 7.9	8.1659	8.9423	3.21	3.96	21 6 4.4
22.3	22 6 42.83	6 41.12	12 52 49.9	53 0.2	8.1795	8.9553	3.20	3.95	22 6 0.8
23.3	22 7 4.94	7 3.18	12 50 38.2	50 48.7	8.1926	8.9674	3.20	3.95	23 5 57.2
24.3	22 7 27.71	7 25.90	12 48 22.8	48 33.6	8.2052	8.9789	3.20	3.95	24 5 53.6
25.3	22 7 51.13	7 49.28	12 46 3.8	46 14.8	8.2170	8.9901	3.19	3.94	25 5 50.1
26.3	22 8 15.19	8 13.30	12 43 41.2	43 52.4	8.2286	9.0012	3.19	3.94	26 5 46.6
27.3	22 8 39.89	8 37.96	12 41 15.0	41 26.4	8.2398	9.0119	3.18	3.94	27 5 43.1
28.3	22 9 5.22	9 3.25	12 38 45.2	38 56.8	8.2507	9.0220	3.18	3.93	28 5 39.6
29.3	22 9 31.17	9 29.17	12 36 11.9	36 23.7	8.2610	9.0319	3.17	3.93	29 5 36.1
30.3	22 9 57.74	9 55.70	12 33 35.1	33 47.1	8.2709	9.0417	3.16	3.92	30 5 32.6
Dec. 1.3	22 10 24.91	10 22.83	12 30 54.8	31 7.1	8.2805	9.0511	3.16	3.92	1 5 29.1
2.3	22 10 52.68	10 50.56	12 28 11.1	28 23.6	8.2879	9.0602	3.15	3.92	2 5 25.6
3.3	22 11 21.04	11 18.89	12 25 24.0	25 36.6	8.2989	9.0690	3.15	3.91	3 5 22.1
4.3	22 11 49.99	11 47.80	12 22 33.4	22 46.3	8.3076	9.0773	3.14	3.91	4 5 18.7
5.3	22 12 19.52	12 17.30	12 19 39.6	19 52.7	8.3161	9.0856	3.13	3.90	5 5 15.3
6.3	22 12 49.62	12 47.36	12 16 42.5	16 55.8	8.3241	9.0937	3.13	3.90	6 5 11.9
7.3	22 13 20.27	13 17.98	12 13 42.1	13 55.5	8.3320	9.1017	3.12	3.90	7 5 8.5
8.3	22 13 51.47	13 49.14	12 10 38.4	10 52.0	8.3395	9.1093	3.12	3.89	8 5 5.1
9.3	22 14 23.21	14 20.85	12 7 31.5	7 45.3	8.3467	9.1167	3.11	3.89	9 5 1.7
10.3	22 14 55.48	14 53.09	12 4 21.5	4 35.5	8.3539	9.1237	3.10	3.88	10 4 58.3
11.3	22 15 28.28	15 25.86	12 1 8.4	1 22.5	8.3609	9.1307	3.10	3.88	11 4 54.9
12.3	22 16 1.60	15 59.16	11 57 52.2	58 6.5	8.3678	9.1377	3.09	3.88	12 4 51.5
13.3	22 16 35.43	16 32.94	11 54 32.9	54 47.3	8.3741	9.1443	3.09	3.87	13 4 48.1
14.3	22 17 9.76	17 7.27	11 51 10.4	51 25.0	8.3804	9.1510	3.08	3.87	14 4 44.7
15.3	22 17 44.59	17 42.08	11 47 45.0	47 59.8	8.3867	9.1576	3.07	3.86	15 4 41.4
16.3	22 18 19.91	18 17.38	11 44 16.6	44 31.5	8.3927	9.1636	3.07	3.86	16 4 38.1
17.3	22 18 55.72	18 53.18	11 40 45.3	41 0.3	8.3985	9.1695	3.06	3.86	17 4 34.7
18.3	22 19 32.00	19 29.44	11 37 11.0	37 26.1	8.4043	9.1754	3.06	3.85	18 4 31.3
19.3	22 20 8.76	20 6.19	11 33 33.8	33 49.0	8.4097	9.1813	3.05	3.85	19 4 28.0
20.3	22 20 45.98	20 43.40	11 29 53.7	30 9.0	8.4151	9.1870	3.04	3.84	20 4 24.7
21.2	22 21 23.66	21 21.07	11 26 10.8	26 26.2	8.4203	9.1926	3.04	3.84	21 4 21.4
22.2	22 22 1.80	21 59.20	11 22 25.0	22 40.5	8.4255	9.1980	3.03	3.83	22 4 18.1
23.2	22 22 40.38	22 37.77	11 18 36.4	18 52.1	8.4304	9.2033	3.02	3.83	23 4 14.8
24.2	22 23 19.40	23 16.77	11 14 45.2	15 0.9	8.4352	9.2084	3.01	3.82	24 4 11.5
25.2	22 23 58.84	23 56.20	11 10 51.2	11 7.0	8.4398	9.2134	3.00	3.81	25 4 8.2
26.2	22 24 38.70	24 36.06	11 6 54.5	7 10.3	8.4445	9.2184	2.99	3.81	26 4 5.0
27.2	22 25 18.98	25 16.33	11 2 55.2	3 11.0	8.4490	9.2230	2.98	3.80	27 4 1.7
28.2	22 25 59.67	25 57.01	10 58 53.2	59 9.1	8.4533	9.2277	2.97	3.80	28 3 58.4
29.2	22 26 40.76	26 38.09	10 54 48.6	55 4.6	8.4574	9.2322	2.96	3.79	29 3 55.2
30.2	22 27 22.23	27 19.55	10 50 41.5	51 57.6	8.4614	9.2366	2.95	3.78	30 3 52.0
31.2	22 28 4.08	28 1.40	10 46 31.9	46 48.0	8.4652	9.2409	2.94	3.78	31 3 48.8
32.2	22 28 46.31	28 43.62	−10 42 19.9	42 35.9	+8.4688	+9.2451	+2.93	+3.77	32 3 45.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Jan. 0.2	15 16 46.17	17 0.24	−15 58 3.6	58 53.3	+8.1877	−8.737	−2.75	+3.49	0 20 34.0
1.2	15 17 8.23	17 22.16	15 59 21.5	60 10.5	8.1829	8.730	2.76	3.49	1 20 30.5
2.2	15 17 30.05	17 43.83	16 0 38.1	1 26.4	8.1780	8.722	2.77	3.50	2 20 26.9
3.2	15 17 51.62	18 5.24	16 1 53.4	2 40.9	8.1729	8.715	2.78	3.50	3 20 23.3
4.2	15 18 12.93	18 26.39	16 3 7.4	3 54.1	8.1675	8.707	2.79	3.51	4 20 19.7
5.2	15 18 33.97	18 47.27	16 4 20.1	5 6.0	8.1620	8.699	2.80	3.51	5 20 16.1
6.2	15 18 54.75	19 7.89	16 5 31.5	6 16.5	8.1565	8.691	2.81	3.51	6 20 12.6
7.2	15 19 15.27	19 28.24	16 6 41.6	7 25.7	8.1509	8.683	2.82	3.52	7 20 9.0
8.2	15 19 35.52	19 48.31	16 7 50.3	8 33.5	8.1450	8.674	2.83	3.52	8 20 5.4
9.2	15 19 55.49	20 8.10	16 8 57.6	9 39.9	8.1389	8.665	2.84	3.52	9 20 1.8
10.2	15 20 15.17	20 27.60	16 10 3.5	10 45.0	8.1325	8.656	2.85	3.53	10 19 58.2
11.2	15 20 34.56	20 46.81	16 11 8.1	11 48.7	8.1260	8.647	2.85	3.53	11 19 54.6
12.2	15 20 53.66	21 5.73	16 12 11.3	12 51.1	8.1194	8.638	2.86	3.53	12 19 51.0
13.2	15 21 12.47	21 24.35	16 13 13.2	13 52.1	8.1125	8.628	2.86	3.53	13 19 47.3
14.2	15 21 30.98	21 42.66	16 14 13.7	14 51.7	8.1054	8.618	2.87	3.54	14 19 43.7
15.2	15 21 49.18	22 0.67	16 15 12.8	15 49.9	8.0980	8.608	2.88	3.54	15 19 40.1
16.2	15 22 7.07	22 18.37	16 16 10.5	16 46.7	8.0905	8.597	2.88	3.54	16 19 36.4
17.2	15 22 24.65	22 35.75	16 17 6.8	17 42.1	8.0827	8.586	2.89	3.54	17 19 32.8
18.2	15 22 41.91	22 52.82	16 18 1.6	18 36.0	8.0748	8.575	2.89	3.54	18 19 29.2
19.2	15 22 58.86	23 9.57	16 18 55.0	19 28.5	8.0667	8.564	2.90	3.55	19 19 25.5
20.2	15 23 15.49	23 25.99	16 19 47.0	20 19.6	8.0582	8.552	2.90	3.55	20 19 21.8
21.2	15 23 31.79	23 42.08	16 20 37.6	21 9.3	8.0494	8.539	2.91	3.55	21 19 18.2
22.2	15 23 47.76	23 57.83	16 21 26.7	21 57.5	8.0403	8.526	2.91	3.55	22 19 14.5
23.2	15 24 3.39	24 13.25	16 22 14.4	22 44.2	8.0310	8.513	2.92	3.55	23 19 10.8
24.2	15 24 18.69	24 28.33	16 23 0.6	23 29.5	8.0215	8.499	2.92	3.55	24 19 7.1
25.2	15 24 33.65	24 43.07	16 23 45.3	24 13.3	8.0116	8.485	2.93	3.55	25 19 3.4
26.2	15 24 48.27	24 57.47	16 24 28.6	24 55.7	8.0014	8.471	2.93	3.55	26 18 59.7
27.1	15 25 2.54	25 11.52	16 25 10.5	25 36.6	7.9905	8.456	2.94	3.55	27 18 56.0
28.1	15 25 16.45	25 25.21	16 25 50.9	26 16.0	7.9793	8.440	2.94	3.56	28 18 52.3
29.1	15 25 30.00	25 38.53	16 26 29.8	26 54.0	7.9678	8.424	2.94	3.56	29 18 48.6
30.1	15 25 43.19	25 51.49	16 27 7.3	27 30.5	7.9559	8.407	2.95	3.56	30 18 44.9
31.1	15 25 56.02	26 4.09	16 27 43.3	28 5.5	7.9437	8.388	2.95	3.56	31 18 41.2
Feb. 1.1	15 26 8.49	26 16.32	16 28 17.7	28 39.0	7.9310	8.369	2.95	3.56	1 18 37.5
2.1	15 26 20.59	26 28.17	16 28 50.6	29 11.0	7.9175	8.349	2.96	3.56	2 18 33.8
3.1	15 26 32.31	26 39.65	16 29 22.0	29 41.4	7.9035	8.328	2.96	3.56	3 18 30.0
4.1	15 26 43.65	26 50.75	16 29 51.9	30 10.3	7.8889	8.306	2.96	3.56	4 18 26.3
5.1	15 26 54.61	27 1.46	16 30 20.3	30 37.7	7.8737	8.283	2.96	3.56	5 18 22.5
6.1	15 27 5.18	27 11.78	16 30 47.2	31 3.6	7.8578	8.259	2.97	3.56	6 18 18.7
7.1	15 27 15.37	27 21.72	16 31 12.6	31 28.0	7.8414	8.233	2.97	3.56	7 18 15.0
8.1	15 27 25.17	27 31.27	16 31 36.5	31 50.9	7.8241	8.206	2.97	3.56	8 18 11.2
9.1	15 27 34.58	27 40.43	16 31 58.9	32 12.3	7.8061	8.176	2.97	3.56	9 18 7.4
10.1	15 27 43.60	27 49.19	16 32 19.7	32 32.2	7.7871	8.144	2.98	3.56	10 18 3.6
11.1	15 27 52.22	27 57.56	16 32 39.0	32 50.6	7.7672	8.110	2.98	3.56	11 17 59.8
12.1	15 28 0.45	28 5.53	16 32 56.8	33 7.5	7.7464	8.073	2.98	3.56	12 17 56.0
13.1	15 28 8.28	28 13.11	16 33 13.1	33 22.9	7.7242	8.033	2.98	3.56	13 17 52.2
14.1	15 28 15.71	28 20.29	16 33 27.9	33 36.7	7.7008	7.989	2.99	3.56	14 17 48.4
15.1	15 28 22.74	28 27.06	16 33 41.2	33 49.0	7.6761	7.940	2.99	3.56	15 17 44.6
16.1	15 28 29.37	28 33.42	16 33 53.0	33 59.8	7.6495	7.885	2.99	3.56	16 17 40.8
17.1	15 28 35.59	28 39.38	16 34 3.3	34 9.1	7.6212	7.822	2.99	3.55	17 17 37.0
18.1	15 28 41.41	28 44.93	16 34 12.1	34 16.9	7.5910	7.747	2.99	3.55	18 17 33.1
19.1	15 28 46.82	28 50.08	16 34 19.4	34 23.2	7.5581	7.658	3.00	3.55	19 17 29.3
20.1	15 28 51.82	28 54.83	16 34 25.2	34 28.0	7.5229	7.545	3.00	3.55	20 17 25.4
21.1	15 28 56.42	28 59.17	16 34 29.5	34 31.4	7.4846	7.392	3.00	3.55	21 17 21.6
22.1	15 29 0.61	29 3.09	16 34 32.3	34 33.3	7.4421	7.153	3.00	3.55	22 17 17.7
23.1	15 29 4.39	29 6.60	16 34 33.6	34 33.7	7.3949	−6.582	3.00	3.55	23 17 13.8
24.1	15 29 7.76	29 9.70	16 34 33.4	34 32.6	7.3413	+6.796	3.00	3.55	24 17 9.9
25.1	15 29 10.71	29 12.39	16 34 31.8	34 30.0	7.2802	7.213	3.01	3.54	25 17 6.1
26.1	15 29 13.25	29 14.66	16 34 28.7	34 25.9	7.2090	7.427	3.01	3.54	26 17 2.2
27.1	15 29 15.37	29 16.52	16 34 24.1	34 20.4	7.1238	7.570	3.01	3.54	27 16 58.3
28.1	15 29 17.08	29 17.96	16 34 18.0	34 13.4	7.0177	7.674	3.01	3.54	28 16 54.4
29.1	15 29 18.37	29 18.98	16 34 10.5	34 4.9	6.8751	7.758	3.01	3.54	29 16 50.4
30.1	15 29 19.24	29 19.58	−16 34 1.5	33 55.0	+6.6612	+7.828	−3.01	+3.54	30 16 46.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1.1	15 29 18.37	29 18.98	−16 34 10.5	34 4.9	+6.8751	+7.758	−3.01	+3.54	1 16 50.4
2.1	15 29 19.24	29 19.58	16 34 1.5	33 55.0	6.6612	7.828	3.01	3.54	2 16 46.5
3.1	15 29 19.69	29 19.76	16 33 51.1	33 43.6	+6.2308	7.889	3.01	3.54	3 16 42.6
4.0	15 29 19.73	29 19.53	16 33 39.2	33 30.7	−6.0591	7.944	3.01	3.53	4 16 38.7
5.0	15 29 19.36	29 18.89	16 33 25.8	33 16.4	6.6051	7.991	3.01	3.53	5 16 34.7
6.0	15 29 18.57	29 17.84	16 33 11.0	33 0.7	6.8395	8.032	3.00	3.53	6 16 30.8
7.0	15 29 17.37	29 16.37	16 32 54.8	32 43.5	6.9893	8.071	3.00	3.52	7 16 26.8
8.0	15 29 15.76	29 14.49	16 32 37.1	32 24.9	7.1017	8.106	3.00	3.52	8 16 22.8
9.0	15 29 13.73	29 12.20	16 32 18.0	32 4.9	7.1909	8.138	2.99	3.52	9 16 18.9
10.0	15 29 11.29	29 9.51	16 31 57.5	31 43.5	7.2632	8.168	2.99	3.51	10 16 14.9
11.0	15 29 8.45	29 6.41	16 31 35.6	31 20.7	7.3245	8.196	2.99	3.51	11 16 10.9
12.0	15 29 5.21	29 2.91	16 31 12.3	30 56.6	7.3782	8.221	2.98	3.50	12 16 6.9
13.0	15 29 1.57	28 59.01	16 30 47.7	30 31.1	7.4260	8.244	2.98	3.50	13 16 2.9
14.0	15 28 57.53	28 54.71	16 30 21.8	30 4.3	7.4690	8.267	2.98	3.50	14 15 58.9
15.0	15 28 53.09	28 50.01	16 29 54.5	29 36.2	7.5082	8.288	2.97	3.49	15 15 54.9
16.0	15 28 48.25	28 44.92	16 29 25.9	29 6.7	7.5436	8.309	2.97	3.49	16 15 50.9
17.0	15 28 43.02	28 39.45	16 28 55.9	28 35.9	7.5756	8.328	2.97	3.48	17 15 46.9
18.0	15 28 37.41	28 33.59	16 28 24.6	28 3.8	7.6054	8.345	2.97	3.48	18 15 42.9
19.0	15 28 31.41	28 27.35	16 27 52.1	27 30.5	7.6333	8.362	2.96	3.47	19 15 38.8
20.0	15 28 25.03	28 20.73	16 27 18.3	26 55.9	7.6592	8.379	2.96	3.47	20 15 34.8
21.0	15 28 18.27	28 13.73	16 26 43.2	26 20.0	7.6833	8.394	2.96	3.46	21 15 30.7
22.0	15 28 11.14	28 6.35	16 26 6.9	25 42.8	7.7061	8.409	2.95	3.46	22 15 26.7
23.0	15 28 3.63	27 58.60	16 25 29.3	25 4.4	7.7278	8.424	2.95	3.45	23 15 22.6
24.0	15 27 55.75	27 50.49	16 24 50.5	24 24.9	7.7480	8.437	2.95	3.45	24 15 18.5
25.0	15 27 47.51	27 42.02	16 24 10.5	23 44.2	7.7669	8.450	2.94	3.44	25 15 14.5
26.0	15 27 38.91	27 33.19	16 23 29.4	23 2.3	7.7851	8.462	2.94	3.44	26 15 10.4
27.0	15 27 29.95	27 24.00	16 22 47.1	22 19.2	7.8026	8.474	2.94	3.43	27 15 6.3
28.0	15 27 20.63	27 14.45	16 22 3.6	21 35.0	7.8191	8.486	2.93	3.42	28 15 2.2
29.0	15 27 10.96	27 4.56	16 21 19.0	20 49.7	7.8346	8.496	2.93	3.42	29 14 58.1
30.0	15 27 0.95	26 54.33	16 20 33.3	20 3.3	7.8492	8.507	2.92	3.41	30 14 54.0
31.0	15 26 50.61	26 43.77	16 19 46.5	19 15.8	7.8632	8.517	2.92	3.41	31 14 49.9
Apr. 1.0	15 26 39.93	26 32.87	16 18 58.6	18 27.2	7.8771	8.526	2.91	3.40	1 14 45.8
2.0	15 26 28.91	26 21.64	16 18 9.7	17 37.6	7.8903	8.536	2.90	3.39	2 14 41.7
3.0	15 26 17.56	26 10.09	16 17 19.7	16 47.0	7.9025	8.545	2.89	3.38	3 14 37.6
4.0	15 26 5.90	25 58.23	16 16 28.7	15 55.4	7.9141	8.553	2.88	3.37	4 14 33.4
5.0	15 25 53.93	25 46.07	16 15 36.7	15 2.8	7.9251	8.562	2.87	3.36	5 14 29.3
6.0	15 25 41.66	25 33.61	16 14 43.7	14 9.2	7.9358	8.570	2.86	3.35	6 14 25.1
7.0	15 25 29.09	25 20.85	16 13 49.8	13 14.7	7.9461	8.577	2.85	3.34	7 14 21.0
8.0	15 25 16.22	25 7.80	16 12 55.0	12 19.3	7.9559	8.584	2.84	3.33	8 14 16.8
9.0	15 25 3.07	24 54.48	16 11 59.3	11 23.1	7.9650	8.591	2.82	3.32	9 14 12.7
9.9	15 24 49.65	24 40.89	16 11 2.8	10 26.0	7.9737	8.597	2.81	3.31	10 14 8.5
10.9	15 24 35.96	24 27.03	16 10 5.4	9 28.1	7.9821	8.604	2.80	3.29	11 14 4.4
11.9	15 24 22.01	24 12.92	16 9 7.2	8 29.4	7.9902	8.610	2.79	3.27	12 14 0.2
12.9	15 24 7.80	23 58.56	16 8 8.2	7 30.0	7.9979	8.615	2.78	3.25	13 13 56.0
13.9	15 23 53.35	23 43.96	16 7 8.5	6 29.9	8.0051	8.620	2.76	3.23	14 13 51.8
14.9	15 23 38.66	23 29.13	16 6 8.1	5 29.1	8.0120	8.625	2.75	3.21	15 13 47.7
15.9	15 23 23.74	23 14.07	16 5 7.0	4 27.6	8.0187	8.630	2.74	3.19	16 13 43.5
16.9	15 23 8.59	22 58.78	16 4 5.2	3 25.4	8.0252	8.635	2.73	3.16	17 13 39.3
17.9	15 22 53.22	22 43.27	16 3 2.8	2 22.6	8.0313	8.639	2.71	3.14	18 13 35.1
18.9	15 22 37.64	22 27.56	16 1 59.8	1 19.2	8.0370	8.643	2.69	3.12	19 13 30.9
19.9	15 22 21.86	22 11.65	16 0 56.2	0 15.3	8.0425	8.647	2.67	3.10	20 13 26.7
20.9	15 22 5.88	21 55.56	15 59 52.1	59 10.8	8.0477	8.651	2.65	3.08	21 13 22.5
21.9	15 21 49.72	21 39.29	15 58 47.4	58 5.8	8.0525	8.654	2.63	3.05	22 13 18.3
22.9	15 21 33.38	21 22.85	15 57 42.2	57 0.4	8.0571	8.657	2.61	3.02	23 13 14.1
23.9	15 21 16.87	21 6.24	15 56 36.6	55 54.5	8.0615	8.660	2.59	2.99	24 13 9.9
24.9	15 21 0.20	20 49.47	15 55 30.6	54 48.2	8.0655	8.663	2.57	2.95	25 13 5.7
25.9	15 20 43.38	20 32.55	15 54 24.1	53 41.5	8.0694	8.666	2.55	2.91	26 13 1.5
26.9	15 20 26.41	20 15.49	15 53 17.2	52 34.4	8.0731	8.668	2.53	2.86	27 12 57.3
27.9	15 20 9.30	19 58.30	15 52 10.0	51 27.0	8.0765	8.670	2.50	2.82	28 12 53.0
28.9	15 19 52.06	19 40.98	15 51 2.6	50 19.4	8.0797	8.671	2.46	2.78	29 12 48.8
29.9	15 19 34.70	19 23.55	15 49 54.9	49 11.5	8.0826	8.673	2.42	2.73	30 12 44.6
30.9	15 19 17.23	19 6.02	−15 48 46.9	48 3.4	−8.0852	+8.675	−2.38	+2.68	31 12 40.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
May 1.9	15 18 59.66	18 48.40	−15 47 38.7	46 55.1	−8.0875	+8.676	−2.34		2 12 36.2
2.9	15 18 42.00	18 30.69	15 46 30.4	45 46.7	8.0896	8.676	2.29		3 12 31.9
3.9	15 18 24.26	18 12.91	15 45 22.0	44 38.2	8.0914	8.677	2.23		4 12 27.7
4.9	15 18 6.45	17 55.06	15 44 13.5	43 29.7	8.0930	8.678	2.16		5 12 23.5
5.9	15 17 48.58	17 37.16	15 43 4.9	42 21.1	8.0944	8.678	2.08		6 12 19.3
6.9	15 17 30.66	17 19.21	15 41 56.3	41 12.5	8.0956	8.678	1.99		7 12 15.0
7.9	15 17 12.69	17 1.22	15 40 47.7	40 4.0	8.0965	8.678	1.86		8 12 10.8
8.9	15 16 54.69	16 43.20	15 39 39.2	38 55.6	8.0973	8.677	−1.68		9 12 6.6
9.9	15 16 36.66	16 25.17	15 38 30.8	37 47.3	8.0978	8.676			10 12 2.3
10.9	15 16 18.62	16 7.14	15 37 22.5	36 39.2	8.0979	8.675		−2.68	11 11 58.1
11.9	15 16 0.58	15 49.11	15 36 14.4	35 31.3	8.0978	8.674		2.75	12 11 53.9
12.9	15 15 42.55	15 31.09	15 35 6.6	34 23.6	8.0975	8.672	+1.68	2.81	13 11 49.6
13.9	15 15 24.53	15 13.09	15 33 59.0	33 16.1	8.0970	8.671	1.86	2.86	14 11 45.4
14.9	15 15 6.54	14 55.12	15 32 51.6	32 8.9	8.0963	8.669	1.99	2.91	15 11 41.2
15.9	15 14 48.58	14 37.19	15 31 44.5	31 2.1	8.0955	8.667	2.08	2.95	16 11 36.9
16.8	15 14 30.66	14 19.31	15 30 37.8	29 55.7	8.0944	8.664	2.16	2.99	17 11 32.7
17.8	15 14 12.79	14 1.48	15 29 31.5	28 49.7	8.0932	8.662	2.23	3.02	18 11 28.5
18.8	15 13 54.97	13 43.71	15 28 25.6	27 44.1	8.0917	8.659	2.29	3.05	19 11 24.3
19.8	15 13 37.22	13 26.01	15 27 20.1	26 39.0	8.0900	8.656	2.34	3.08	20 11 20.0
20.8	15 13 19.54	13 8.38	15 26 15.1	25 34.4	8.0881	8.653	2.38	3.11	21 11 15.8
21.8	15 13 1.94	12 50.84	15 25 10.7	24 30.3	8.0859	8.649	2.41	3.14	22 11 11.6
22.8	15 12 44.44	12 33.40	15 24 6.8	23 26.8	8.0834	8.645	2.43	3.16	23 11 7.4
23.8	15 12 27.04	12 16.06	15 23 3.5	22 23.9	8.0809	8.641	2.45	3.19	24 11 3.1
24.8	15 12 9.74	11 58.84	15 22 0.8	21 21.6	8.0782	8.636	2.47	3.21	25 10 58.9
25.8	15 11 52.56	11 41.75	15 20 58.8	20 19.9	8.0750	8.632	2.49	3.23	26 10 54.7
26.8	15 11 35.51	11 24.79	15 19 57.4	19 18.9	8.0716	8.627	2.51	3.25	27 10 50.5
27.8	15 11 18.60	11 7.97	15 18 56.7	18 18.7	8.0680	8.622	2.53	3.27	28 10 46.3
28.8	15 11 1.83	10 51.30	15 17 56.8	17 19.3	8.0642	8.616	2.55	3.29	29 10 42.1
29.8	15 10 45.21	10 34.79	15 16 57.7	16 20.7	8.0602	8.610	2.57	3.31	30 10 37.9
30.8	15 10 28.75	10 18.44	15 15 59.4	15 23.0	8.0558	8.604	2.59	3.33	31 10 33.7
31.8	15 10 12.46	10 2.26	15 15 2.0	14 26.2	8.0512	8.597	2.61	3.34	32 10 29.5
June 1.8	15 9 56.35	9 46.26	15 14 5.5	13 30.3	8.0463	8.590	2.63	3.36	2 10 25.3
2.8	15 9 40.42	9 30.45	15 13 9.9	12 35.3	8.0413	8.583	2.65	3.37	3 10 21.1
3.8	15 9 24.68	9 14.84	15 12 15.2	11 41.2	8.0359	8.576	2.67	3.38	4 10 16.9
4.8	15 9 9.14	8 59.44	15 11 21.5	10 48.2	8.0301	8.567	2.69	3.40	5 10 12.7
5.8	15 8 53.81	8 44.25	15 10 28.9	9 56.2	8.0241	8.558	2.71	3.41	6 10 8.5
6.8	15 8 38.70	8 29.28	15 9 37.3	9 5.2	8.0177	8.550	2.73	3.42	7 10 4.3
7.8	15 8 23.81	8 14.54	15 8 46.7	8 15.3	8.0110	8.541	2.75	3.43	8 10 0.2
8.8	15 8 9.16	8 0.04	15 7 57.2	7 26.6	8.0039	8.531	2.76	3.44	9 9 56.0
9.8	15 7 54.75	7 45.79	15 7 8.9	6 39.0	7.9967	8.521	2.77	3.45	10 9 51.8
10.8	15 7 40.58	7 31.78	15 6 21.7	5 52.6	7.9892	8.510	2.78	3.46	11 9 47.7
11.8	15 7 26.66	7 18.02	15 5 35.7	5 7.4	7.9814	8.499	2.80	3.47	12 9 43.5
12.8	15 7 12.99	7 4.51	15 4 50.9	4 23.4	7.9733	8.487	2.81	3.48	13 9 39.4
13.8	15 6 59.58	6 51.27	15 4 7.3	3 40.6	7.9647	8.475	2.82	3.49	14 9 35.2
14.8	15 6 46.44	6 38.30	15 3 25.0	2 59.1	7.9558	8.461	2.83	3.50	15 9 31.0
15.8	15 6 33.57	6 25.61	15 2 44.0	2 18.9	7.9465	8.447	2.84	3.51	16 9 26.9
16.8	15 6 20.98	6 13.21	15 2 4.3	1 40.0	7.9366	8.433	2.85	3.52	17 9 22.7
17.8	15 6 8.68	6 1.09	15 1 25.9	1 2.5	7.9264	8.418	2.86	3.53	18 9 18.6
18.8	15 5 56.67	5 49.26	15 0 48.9	0 26.4	7.9159	8.402	2.86	3.53	19 9 14.5
19.8	15 5 44.95	5 37.72	14 60 13.3	59 51.6	7.9052	8.385	2.87	3.54	20 9 10.4
20.8	15 5 33.52	5 26.48	14 59 39.0	59 18.1	7.8939	8.369	2.87	3.55	21 9 6.3
21.7	15 5 22.39	5 15.55	14 59 6.0	58 46.0	7.8820	8.351	2.88	3.56	22 9 2.2
22.7	15 5 11.57	5 4.93	14 58 34.4	58 15.4	7.8694	8.331	2.88	3.56	23 8 58.0
23.7	15 5 1.07	4 54.63	14 58 4.3	57 46.3	7.8562	8.309	2.89	3.57	24 8 53.9
24.7	15 4 50.89	4 44.65	14 57 35.7	57 18.6	7.8425	8.286	2.89	3.57	25 8 49.8
25.7	15 4 41.03	4 35.00	14 57 8.6	56 52.3	7.8282	8.263	2.90	3.58	26 8 45.7
26.7	15 4 31.50	4 25.68	14 56 42.9	56 27.5	7.8131	8.239	2.91	3.58	27 8 41.6
27.7	15 4 22.30	4 16.69	14 56 18.7	56 4.3	7.7976	8.212	2.91	3.58	28 8 37.6
28.7	15 4 13.43	4 8.03	14 55 56.0	55 42.6	7.7812	8.182	2.92	3.58	29 8 33.5
29.7	15 4 4.90	3 59.72	14 55 34.9	55 22.4	7.7636	8.150	2.92	3.58	30 8 29.4
30.7	15 3 56.72	3 51.77	14 55 15.3	55 3.8	7.7447	8.116	2.93	3.59	31 8 25.3
31.7	15 3 48.90	3 44.17	−14 54 57.3	54 46.7	−7.7250	+8.078	+2.93	−3.59	32 8 21.3

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
July 1.7	15 3 48.90	3 44.17	−14 54 57.3	54 46.7	−7.7250	+8.078	+2.93	−3.59	2 8 21.2
2.7	15 3 41.43	3 36.92	14 54 40.8	54 31.2	7.7047	8.038	2.94	3.59	3 8 17 3
3.7	15 3 34.31	3 30.03	14 54 25.9	54 17.3	7.6830	7.991	2.94	3 59	4 8 13.2
4.7	15 3 27.55	3 23.50	14 54 12.6	54 5.0	7.6599	7.939	2.94	3.59	5 8 9.2
5.7	15 3 21.15	3 17.32	14 54 0.9	53 54.3	7.6354	7.879	2.94	3.59	6 8 5.1
6.7	15 3 15.11	3 11.50	14 53 50.8	53 45.2	7 6095	7.810	2.95	3.60	7 8 1.1
7 7	15 3 9.43	3 6.05	14 53 42.3	53 37.8	7.5816	7.725	2.95	3.60	8 7 57.1
8.7	15 3 4.12	3 0.98	14 53 35.5	53 32.0	7.5509	7.620	2.95	3.60	9 7 53.1
9.7	15 2 59.19	2 56.29	14 53 30.3	53 27.9	7.5179	7.480	2.95	3.60	10 7 49.0
10.7	15 2 54.63	2 51.97	14 53 26.8	53 25.4	7.4821	7.273	2.95	3.60	11 7 45.0
11.7	15 2 50.45	2 48.02	14 53 24.9	53 24.5	7 4432	+6.883	2.95	3.60	12 7 41.0
12.7	15 2 46 64	2 44.44	14 53 24.6	53 25.2	7.4009	−6.541	2.96	3.60	13 7 37.0
13.7	15 2 43.20	2 41.24	14 53 25.9	53 27.6	7.3535	7.174	2.96	3.61	14 7 33.1
14.7	15 2 40.14	2 38.42	14 53 28 9	53 31.6	7.2995	7.427	2.96	3.61	15 7 29.1
15.7	15 2 37.46	2 35.98	14 53 33.6	53 37.3	7.2378	7.582	2.96	3.61	16 7 25.1
16.7	15 2 35.16	2 33.91	14 53 39.9	53 44.7	7.1669	7.696	2.96	3.61	17 7 21.2
17.7	15 2 33.23	2 32.22	14 53 47.9	53 53.7	7.0822	7.786	2.96	3.61	18 7 17.2
18.7	15 2 31.68	2 30.91	14 53 57.5	54 4.3	6.9736	7.859	2.96	3.61	19 7 13.2
19.7	15 2 30.52	2 29.99	14 54 8.7	54 16.6	6.8284	7.923	2.96	3.61	20 7 9.3
20.7	15 2 29.74	2 29.45	14 54 21.6	54 30.5	6.6125	7.978	2.96	3.61	21 7 5.3
21.7	15 2 29.34	2 29.29	14 54 36.1	54 46.1	-6.1639	8.028	2.97	3.60	22 7 1.4
22.7	15 2 29.32	2 29.52	14 54 52.3	55 3.3	+6.0847	8.073	2.97	3.60	23 6 57.5
23.7	15 2 29.69	2 30.13	14 55 10.2	55 22.2	6.5937	8.113	2.97	3.60	24 6 53.6
24.7	15 2 30.45	2 31.13	14 55 29.7	55 42.7	6 8194	8.149	2.97	3 60	25 6 49.6
25.7	15 2 31.50	2 32.51	14 55 50.8	56 4.8	6.9671	8.182	2.97	3.60	26 6 45.7
26.7	15 2 33.12	2 34.48	14 56 13.5	56 28.5	7.0772	8.213	2.97	3.60	27 6 41.9
27.7	15 2 35.03	2 36.44	14 56 37.8	56 53.8	7.1649	8.241	2.97	3.59	28 6 38.0
28.6	15 2 37.33	2 38.98	14 57 3.7	57 20.7	7.2387	8.268	2.97	3.59	29 6 34.1
29.6	15 2 40.02	2 41.91	14 57 31.2	57 49.3	7.3018	8.294	2.97	3.59	30 6 30.2
30.6	15 2 43.10	2 45.22	14 58 0.4	58 19.5	7.3562	8.319	2.97	3.59	31 6 26.3
31.6	15 2 46.56	2 48.91	14 58 31.2	58 51.3	7.4039	8.341	2.97	3.58	32 6 22.4
Aug. 1.6	15 2 50.40	2 52.99	14 59 3 6	59 24.7	7.4469	8.363	2.96	3.58	2 6 18.6
2.6	15 2 54.62	2 57.46	14 59 37.6	59 59.6	7.4866	8.383	2.96	3.58	3 6 14.7
3.6	15 2 59.23	3 2.32	15 0 13.1	0 36 1	7.5233	8.402	2.96	3.57	4 6 10.8
4.6	15 3 4.23	3 7.56	15 0 50.2	1 14.2	7.5568	8.420	2.96	3.57	5 6 7.0
5.6	15 3 9.61	3 13.18	15 1 28.8	1 53.8	7.5875	8.437	2.96	3.56	6 6 3.2
6.6	15 3 15.37	3 19.18	15 2 9.0	2 34.9	7.6162	8.454	2.96	3.56	7 5 59.3
7.6	15 3 21.51	3 25.56	15 2 50 7	3 17.6	7.6430	8.470	2.96	3 56	8 5 55.5
8.6	15 3 28.03	3 32.32	15 3 33 9	4 1.8	7.6684	8.485	2.96	3 55	9 5 51.7
9.6	15 3 34.93	3 39.45	15 4 18.7	4 47.5	7.6920	8.500	2.96	3.55	10 5 47.9
10.6	15 3 42.20	3 46 95	15 5 5.0	5 34.6	7.7141	8 514	2.96	3.55	11 5 44.1
11.6	15 3 49.84	3 54.82	15 5 52.7	6 23.2	7.7348	8.527	2.95	3.54	12 5 40.3
12.6	15 3 57.84	4 3.06	15 6 41 8	7 13.3	7.7547	8.539	2.95	3.54	13 5 36.5
13.6	15 4 6.21	4 11.66	15 7 32.4	8 4.9	7.7739	8.552	2.95	3.53	14 5 32.7
14.6	15 4 14.95	4 20.62	15 8 24.5	8 57.9	7.7920	8.564	2.94	3.53	15 5 28 9
15.6	15 4 24.05	4 29.94	15 9 18.0	9 52.3	7.8092	8 576	2.94	3.52	16 5 25.1
16.6	15 4 33.51	4 39.62	15 10 12.9	10 48.1	7.8255	8.587	2.94	3.52	17 5 21 4
17.6	15 4 43.32	4 49.66	15 11 9.2	11 45.3	7.8412	8.598	2.94	3.51	18 5 17.6
18.6	15 4 53.49	5 0.06	15 12 6.9	12 43.8	7.8566	8.608	2.94	3.51	19 5 13.8
19.6	15 5 4.02	5 10.81	15 13 5.9	13 43 7	7.8712	8.618	2.93	3.50	20 5 10.1
20.6	15 5 14.90	5 21.92	15 14 6.3	14 44.9	7.8854	8.627	2.93	3.50	21 5 6.3
21.6	15 5 26.14	5 33.39	15 15 8.0	15 47.4	7.8993	8.636	2.93	3.49	22 5 2.6
22.6	15 5 37.74	5 45.21	15 16 11.0	16 51.2	7.9126	8.645	2.92	3.49	23 4 58.9
23.6	15 5 49.69	5 57.37	15 17 15.3	17 56.4	7.9251	8.654	2.92	3.48	24 4 55.1
24.6	15 6 1.98	6 9.87	15 18 20.9	19 2.9	7.9372	8.663	2.91	3.48	25 4 51.4
25.6	15 6 14.61	6 22.72	15 19 27.8	20 10.6	7.9488	8 671	2.91	3.47	26 4 47.7
26.6	15 6 27.58	6 35.91	15 20 36.0	21 19.5	7.9602	8.679	2.91	3.46	27 4 44 0
27.6	15 6 40.89	6 49.44	15 21 45.4	22 20.6	7.9713	8.686	2.90	3.46	28 4 40.3
28.6	15 6 54.54	7 3.31	15 22 55.9	23 40.9	7.9821	8.694	2.90	3.45	29 4 36.6
29.6	15 7 8.53	7 17.51	15 24 7.6	24 53.4	7.9925	8.701	2.89	3.44	30 4 32.9
30.6	15 7 22.65	7 31.84	15 25 20.5	26 7.1	8.0026	8.708	2.89	3.43	31 4 29.2
31.6	15 7 37.50	7 46.89	−15 26 34.6	27 22.0	+8.0122	−8.715	+2.89	−3.42	32 4 25.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1.6	15 7 52.47	8 2.06	−15 27 49.9	28 38.0	+8.0215	−8.722	+2.88	−3.42	2 4 21.8
2.6	15 8 7.76	8 17.56	15 29 6.3	29 55.1	8.0306	8.728	2.88	3.41	3 4 18.1
3.5	15 8 23.37	8 33.38	15 30 23.8	31 13.3	8.0395	8.734	2.87	3.40	4 4 14.5
4.5	15 8 39.30	8 49.51	15 31 42.4	32 32.5	8.0481	8.740	2.87	3.39	5 4 10.8
5.5	15 8 55.54	9 5.95	15 33 2.0	33 52.8	8.0564	8.745	2.87	3.38	6 4 7.1
6.5	15 9 12.09	9 22.69	15 34 22.7	35 14.2	8.0644	8.751	2.86	3.38	7 4 3.5
7.5	15 9 28.94	9 39.74	15 35 44.4	36 36.6	8.0722	8.757	2.86	3.37	8 3 59.8
8.5	15 9 46.10	9 57.09	15 37 7.1	37 59.9	8.0799	8.762	2.85	3.36	9 3 56.2
9.5	15 10 3.56	10 14.74	15 38 30.8	39 24.1	8.0874	8.767	2.85	3.35	10 3 52.5
10.5	15 10 21.32	10 32.69	15 39 55.4	40 49.3	8.0946	8.771	2.85	3.34	11 3 48.9
11.5	15 10 39.37	10 50.93	15 41 20.9	42 15.4	8.1015	8.776	2.84	3.33	12 3 45.3
12.5	15 10 57.70	11 9.45	15 42 47.3	43 42.4	8.1082	8.780	2.84	3.32	13 3 41.7
13.5	15 11 16.32	11 28.25	15 44 14.6	45 10.3	8.1149	8.785	2.83	3.31	14 3 38.1
14.5	15 11 35.22	11 47.33	15 45 42.8	46 39.1	8.1213	8.789	2.83	3.29	15 3 34.4
15.5	15 11 54.40	12 6.69	15 47 11.9	48 8.8	8.1276	8.794	2.83	3.28	16 3 30.8
16.5	15 12 13.86	12 26.32	15 48 41.9	49 39.3	8.1338	8.798	2.82	3.27	17 3 27.2
17.5	15 12 33.59	12 46.23	15 50 12.7	51 10.5	8.1397	8.801	2.82	3.26	18 3 23.6
18.5	15 12 53.59	13 6.41	15 51 44.2	52 42.5	8.1456	8.805	2.81	3.25	19 3 20.0
19.5	15 13 13.86	13 26.85	15 53 16.4	54 15.2	8.1513	8.808	2.81	3.23	20 3 16.4
20.5	15 13 34.39	13 47.55	15 54 49.3	56 48.6	8.1568	8.812	2.80	3.22	21 3 12.9
21.5	15 13 55.18	14 8.51	15 56 23.0	57 22.8	8.1622	8.815	2.80	3.21	22 3 9.3
22.5	15 14 16.23	14 29.73	15 57 57.5	58 57.8	8.1676	8.819	2.79	3.19	23 3 5.7
23.5	15 14 37.54	14 51.21	15 59 32.7	60 33.5	8.1728	8.822	2.78	3.18	24 3 2.1
24.5	15 14 59.10	15 12.94	16 1 8.6	2 9.8	8.1778	8.825	2.78	3.16	25 2 58.5
25.5	15 15 20.91	15 34.91	16 2 45.1	3 46.8	8.1827	8.828	2.77	3.15	26 2 55.0
26.5	15 15 42.96	15 57.12	16 4 22.3	5 24.4	8.1874	8.831	2.76	3.13	27 2 51.4
27.5	15 16 5.25	16 19.56	16 6 0.1	7 2.5	8.1920	8.833	2.75	3.11	28 2 47.9
28.5	15 16 27.77	16 42.23	16 7 38.4	8 41.2	8.1964	8.836	2.74	3.10	29 2 44.3
29.5	15 16 50.52	17 5.13	16 9 17.3	10 20.4	8.2008	8.838	2.74	3.08	30 2 40.7
30.5	15 17 13.50	17 28.26	16 10 56.7	12 0.1	8.2052	8.840	2.73	3.06	31 2 37.2
Oct. 1.5	15 17 36.71	17 51.61	16 12 36.6	13 40.4	8.2094	8.842	2.72	3.05	2 2 33.6
2.5	15 18 0.14	18 15.18	16 14 17.0	15 21.2	8.2134	8.844	2.71	3.03	3 2 30.1
3.5	15 18 23.78	18 38.96	16 15 57.9	17 2.5	8.2172	8.847	2.70	3.01	4 2 26.5
4.5	15 18 47.63	19 2.95	16 17 39.3	18 44.2	8.2210	8.849	2.70	2.99	5 2 23.0
5.5	15 19 11.69	19 27.15	16 19 21.1	20 26.3	8.2247	8.850	2.69	2.97	6 2 19.5
6.5	15 19 35.95	19 51.55	16 21 3.3	22 8.8	8.2283	8.852	2.68	2.95	7 2 16.0
7.5	15 20 0.41	20 16.14	16 22 45.9	23 51.6	8.2318	8.853	2.67	2.93	8 2 12.4
8.5	15 20 25.06	20 40.92	16 24 28.8	25 34.7	8.2351	8.855	2.66	2.91	9 2 8.9
9.4	15 20 49.90	21 5.88	16 26 12.0	27 18.2	8.2384	8.856	2.65	2.89	10 2 5.4
10.4	15 21 14.93	21 31.03	16 27 55.6	29 2.0	8.2417	8.858	2.64	2.87	11 2 1.9
11.4	15 21 40.14	21 56.37	16 29 39.5	30 46.1	8.2448	8.859	2.63	2.85	12 1 58.4
12.4	15 22 5.53	22 21.89	16 31 23.7	32 30.4	8.2478	8.860	2.62	2.83	13 1 54.9
13.4	15 22 31.10	22 47.58	16 33 8.1	34 15.0	8.2508	8.861	2.61	2.81	14 1 51.4
14.4	15 22 56.84	23 13.44	16 34 52.7	35 59.8	8.2537	8.862	2.60	2.79	15 1 47.9
15.4	15 23 22.75	23 39.46	16 36 37.5	37 44.8	8.2564	8.862	2.59	2.77	16 1 44.4
16.4	15 23 48.82	24 5.64	16 38 22.5	39 30.0	8.2591	8.863	2.58	2.74	17 1 40.9
17.4	15 24 15.05	24 31.98	16 40 7.7	41 15.4	8.2618	8.864	2.57	2.71	18 1 37.4
18.4	15 24 41.44	24 58.47	16 41 53.1	43 0.9	8.2643	8.865	2.56	−2.68	19 1 33.9
19.4	15 25 7.98	25 25.11	16 43 38.7	44 46.6	8.2667	8.866	2.55		20 1 30.4
20.4	15 25 34.66	25 51.90	16 45 24.4	46 32.4	8.2691	8.866	2.54		21 1 26.9
21.4	15 26 1.49	26 18.84	16 47 10.2	48 18.2	8.2715	8.866	2.53		22 1 23.4
22.4	15 26 28.47	26 45.92	16 48 56.0	50 4.1	8.2738	8.866	2.52		23 1 20.0
23.4	15 26 55.59	27 13.13	16 50 41.9	51 50.0	8.2760	8.867	2.50		24 1 16.5
24.4	15 27 22.84	27 40.47	16 52 27.8	53 36.0	8.2780	8.867	2.49		25 1 13.0
25.4	15 27 50.22	28 7.94	16 54 13.8	55 22.0	8.2800	8.867	2.48		26 1 9.5
26.4	15 28 17.72	28 35.52	16 55 59.8	57 8.0	8.2818	8.867	2.47		27 1 6.0
27.4	15 28 45.33	29 3.21	16 57 45.7	58 54.0	8.2836	8.867	2.45		28 1 2.6
28.4	15 29 13.05	29 31.00	16 59 31.6	60 40.0	8.2853	8.867	2.43		29 0 59.1
29.4	15 29 40.88	29 58.90	17 1 17.5	2 25.9	8.2869	8.866	2.42		30 0 55.6
30.4	15 30 8.81	30 26.91	17 3 3.3	4 11.6	8.2885	8.866	2.40		31 0 52.2
31.4	15 30 36.84	30 55.02	17 4 48.9	5 57.2	8.2900	8.865	2.38		32 0 48.7
32.4	15 31 4.97	31 23.22	−17 6 34.4	7 42.6	+8.2915	−8.865	+2.36		33 0 45.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1.4	15 31 4.97	31 23.22	−17 6 34.4	7 42.6	+8.2915	−8.865	+2.36		2 0 45.2
2.4	15 31 33.19	31 51.51	17 8 19.8	9 27.9	8.2929	8.864	2.34	+2.68	3 0 41.8
3.4	15 32 1.50	32 19.88	17 10 5.0	11 13.1	8.2942	8.863	2.32	2.72	4 0 38.3
4.4	15 32 29.89	32 48.32	17 11 50.1	12 58.1	8.2953	8.863	2.30	2.76	5 0 34.9
5.4	15 32 58.35	33 16.83	17 13 35.0	14 42.9	8.2964	8.862	2.28	2.80	6 0 31.4
6.4	15 33 26.88	33 45.42	17 15 19.7	16 27.4	8.2975	8.861	2.26	2.83	7 0 27.9
7.4	15 33 55.48	34 14.08	17 17 4.1	18 11.6	8.2985	8.860	2.23	2.86	8 0 24.5
8.4	15 34 24.15	34 42.80	17 18 48.2	19 55.5	8.2995	8.858	2.20	2.89	9 0 21.0
9.4	15 34 52.88	35 11.58	17 20 32.0	21 39.2	8.3004	8.857	2.17	2.91	10 0 17.6
10.4	15 35 21.67	35 40.41	17 22 15.5	23 22.6	8.3013	8.856	2.14	2.93	11 0 14.1
11.4	15 35 50.51	36 9.28	17 23 58.7	25 5.7	8.3019	8.855	2.11	2.95	12 0 10.7
12.4	15 36 19.39	36 38.20	17 25 41.7	26 48.5	8.3025	8.854	2.08	2.97	13 0 7.2
13.4	15 36 48.31	37 7.16	17 27 24.4	28 30.9	8.3031	8.852	2.04	2.99	14 0 3.8
14.4	15 37 17.27	37 36.16	17 29 6.7	30 13.0	8.3037	8.851	1.99	3.01	15 0 0.3
15.3	15 37 46.27	38 5.19	17 30 48.6	31 54.7	8.3043	8.849	1.93	3.03	15 23 56.9
16.3	15 38 15.30	38 34.24	17 32 30.1	33 36.0	8.3046	8.847	1.87	3.05	16 23 53.4
17.3	15 38 44.35	39 3.31	17 34 11.2	35 16.9	8.3049	8.846	1.81	3.06	17 23 50.0
18.3	15 39 13.42	39 32.40	17 35 51.9	36 57.3	8.3052	8.844	1.75	3.07	18 23 46.5
19.3	15 39 42.51	40 1.51	17 37 32.1	38 37.3	8.3055	8.842	+1.68	3.09	19 23 43.1
20.3	15 40 11.62	40 30.63	17 39 11.9	40 16.8	8.3057	8.840		3.10	20 23 39.6
21.3	15 40 40.73	40 59.75	17 40 51.2	41 55.9	8.3057	8.838		3.12	21 23 36.2
22.3	15 41 9.84	41 28.87	17 42 30.1	43 34.6	8.3057	8.836		3.13	22 23 32.7
23.3	15 41 38.95	41 57.99	17 44 8.6	45 12.8	8.3057	8.834		3.14	23 23 29.3
24.3	15 42 8.06	42 27.10	17 45 46.6	46 50.4	8.3055	8.832	−1.68	3.16	24 23 25.9
25.3	15 42 37.15	42 56.19	17 47 24.0	48 27.4	8.3052	8.829	1.78	3.17	25 23 22.4
26.3	15 43 6.22	43 25.25	17 49 0.8	50 3.9	8.3048	8.826	1.86	3.18	26 23 19.0
27.3	15 43 35.26	43 54.28	17 50 37.0	51 39.8	8.3044	8.823	1.93	3.18	27 23 15.5
28.3	15 44 4.27	44 23.28	17 52 12.6	53 15.0	8.3040	8.821	1.99	3.19	28 23 12.1
29.3	15 44 33.25	44 52.25	17 53 47.6	54 49.6	8.3034	8.818	2.04	3.20	29 23 8.6
30.3	15 45 2.19	45 21.18	17 55 22.0	56 23.7	8.3028	8.815	2.08	3.20	30 23 5.2
Dec. 1.3	15 45 31.09	45 50.06	17 56 55.8	57 57.2	8.3022	8.812	2.11	3.21	1 23 1.7
2.3	15 45 59.94	46 18.88	17 58 29.0	59 30.0	8.3014	8.810	2.14	3.22	2 22 58.3
3.3	15 46 28.74	46 47.61	18 0 1.6	1 2.1	8.3006	8.807	2.17	3.23	3 22 54.8
4.3	15 46 57.48	47 16.34	18 1 33.5	2 33.5	8.2996	8.803	2.20	3.23	4 22 51.4
5.3	15 47 26.15	47 44.97	18 3 4.7	4 4.3	8.2985	8.800	2.23	3.24	5 22 47.9
6.3	15 47 54.75	48 13.54	18 4 35.2	5 34.4	8.2975	8.797	2.26	3.25	6 22 44.5
7.3	15 48 23.23	48 42.04	18 6 5.0	7 3.8	8.2964	8.793	2.29	3.25	7 22 41.0
8.3	15 48 51.74	49 10.46	18 7 34.1	8 32.4	8.2953	8.790	2.32	3.26	8 22 37.5
9.3	15 49 20.12	49 38.79	18 9 2.5	10 0.3	8.2940	8.786	2.34	3.27	9 22 34.0
10.3	15 49 48.41	50 7.03	18 10 30.1	11 27.5	8.2926	8.782	2.36	3.27	10 22 30.6
11.3	15 50 16.61	50 35.17	18 11 57.0	12 54.0	8.2911	8.779	2.38	3.28	11 22 27.1
12.3	15 50 44.71	51 3.21	18 13 23.2	14 19.7	8.2896	8.775	2.40	3.29	12 22 23.7
13.3	15 51 12.71	51 31.15	18 14 48.6	15 44.6	8.2880	8.771	2.41	3.29	13 22 20.2
14.3	15 51 40.61	51 58.99	18 16 13.2	17 8.7	8.2865	8.767	2.42	3.30	14 22 16.7
15.3	15 52 8.41	52 26.73	18 17 37.0	18 32.0	8.2848	8.763	2.44	3.30	15 22 13.3
16.3	15 52 36.10	52 54.36	18 19 0.0	19 54.4	8.2830	8.758	2.45	3.31	16 22 9.8
17.3	15 53 3.67	53 21.87	18 20 22.1	21 16.0	8.2811	8.754	2.46	3.31	17 22 6.3
18.3	15 53 31.12	53 49.24	18 21 43.4	22 36.8	8.2792	8.750	2.48	3.32	18 22 2.8
19.3	15 53 58.44	54 16.47	18 23 3.9	23 56.8	8.2770	8.745	2.50	3.32	19 21 59.3
20.3	15 54 25.62	54 43.56	18 24 23.6	25 15.9	8.2748	8.741	2.52	3.33	20 21 55.9
21.2	15 54 52.66	55 10.51	18 25 42.4	26 34.2	8.2724	8.736	2.54	3.33	21 21 52.4
22.2	15 55 19.55	55 37.31	18 27 0.4	27 51.6	8.2700	8.731	2.56	3.34	22 21 48.9
23.2	15 55 46.29	56 3.96	18 28 17.5	29 8.1	8.2675	8.726	2.58	3.34	23 21 45.4
24.2	15 56 12.87	56 30.45	18 29 33.7	30 23.7	8.2650	8.721	2.60	3.35	24 21 41.9
25.2	15 56 39.30	56 56.78	18 30 49.0	31 38.4	8.2624	8.716	2.61	3.35	25 21 38.4
26.2	15 57 5.57	57 22.95	18 32 3.4	32 52.2	8.2598	8.711	2.63	3.36	26 21 34.9
27.2	15 57 31.68	57 48.95	18 33 16.9	34 5.1	8.2569	8.705	2.64	3.36	27 21 31.4
28.2	15 57 57.61	58 14.76	18 34 29.5	35 17.1	8.2538	8.700	2.65	3.37	28 21 27.9
29.2	15 58 23.35	58 40.38	18 35 41.2	36 28.2	8.2506	8.694	2.66	3.37	29 21 24.4
30.2	15 58 48.90	59 5.81	18 36 51.9	37 38.3	8.2474	8.688	2.67	3.38	30 21 20.9
31.2	15 59 14.26	59 31.05	18 38 1.6	38 47.5	8.2442	8.682	2.68	3.38	31 21 17.4
32.2	15 59 39.43	59 56.10	−18 39 10.4	39 55.7	+8.2408	−8.676	−2.68	+3.38	32 21 13.9

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Jan. 0.2	6 26 59.61	26 56.59	+23 37 51.5	37 53.6	−7.8928	+7.730			0 11 45.5
1.2	6 26 48.37	26 45.35	23 37 59.2	38 1.3	7.8922	7.726			1 11 41.4
2.2	6 26 37.14	26 34.13	23 38 6.8	38 8.9	7.8911	7.722			2 11 37.3
3.2	6 26 25.95	26 22.95	23 38 14.4	38 16.4	7.8897	7.716			3 11 33.2
4.2	6 26 14.80	26 11.81	23 38 21.8	38 23.8	7.8881	7.710			4 11 29.0
5.2	6 26 3.60	26 0.72	23 38 29.2	38 31.2	7.8864	7.704			5 11 24.9
6.2	6 25 52.63	25 49.67	23 38 36.4	38 38.4	7.8845	7.698			6 11 20.8
7.2	6 25 41.62	25 38.68	23 38 43.6	38 45.5	7.8826	7.692	+2.08		7 11 16.7
8.2	6 25 30.65	25 27.73	23 38 50.7	38 52.5	7.8805	7.686	2.13		8 11 12.5
9.2	6 25 19.75	25 16.84	23 38 57.6	38 59.5	7.8781	7.679	2.17		9 11 8.4
10.2	6 25 8.90	25 6.01	23 39 4.5	39 6.3	7.8755	7.672	2.21		10 11 4.3
11.2	6 24 58.12	24 55.26	23 39 11.2	39 13.0	7.8726	7.665	2.24		11 11 0.2
12.2	6 24 47.42	24 44.57	23 39 17.9	39 19.6	7.8696	7.658	2.27		12 10 56.1
13.2	6 24 36.79	24 33.97	23 39 24.4	39 26.1	7.8662	7.651	2.30		13 10 52.0
14.2	6 24 26.25	24 23.46	23 39 30.8	39 32.5	7.8626	7.643	2.33		14 10 47.8
15.2	6 24 15.81	24 13.03	23 39 37.1	39 38.7	7.8588	7.635	2.35		15 10 43.7
16.2	6 24 5.45	24 2.70	23 39 43.3	39 44.9	7.8549	7.627	2.37		16 10 39.6
17.2	6 23 55.19	23 52.47	23 39 49.3	39 50.9	7.8507	7.619	2.39		17 10 35.5
18.2	6 23 45.02	23 42.34	23 39 55.2	39 56.8	7.8465	7.611	2.41		18 10 31.4
19.2	6 23 34.97	23 32.31	23 40 1.0	40 2.5	7.8419	7.602	2.43		19 10 27.3
20.2	6 23 25.02	23 22.39	23 40 6.7	40 8.2	7.8370	7.593	2.44		20 10 23.2
21.2	6 23 15.18	23 12.58	23 40 12.3	40 13.7	7.8318	7.583	2.45		21 10 19.1
22.2	6 23 5.46	23 2.90	23 40 17.7	40 19.1	7.8264	7.573	2.47		22 10 15.0
23.2	6 22 55.86	22 53.33	23 40 23.0	40 24.4	7.8209	7.563	2.48		23 10 11.0
24.2	6 22 46.30	22 43.90	23 40 28.2	40 29.5	7.8151	7.553	2.49		24 10 6.9
25.2	6 22 37.05	22 34.60	23 40 33.2	40 34.6	7.8088	7.542	2.50		25 10 2.8
26.2	6 22 27.85	22 25.43	23 40 38.2	40 39.5	7.8023	7.531	2.51		26 9 58.7
27.1	6 22 18.79	22 16.40	23 40 43.0	40 44.3	7.7957	7.520	2.52		27 9 54.6
28.1	6 22 9.86	22 7.52	23 40 47.7	40 48.9	7.7890	7.508	2.53		28 9 50.5
29.1	6 22 1.08	21 58.78	23 40 52.3	40 53.5	7.7816	7.496	2.55		29 9 46.5
30.1	6 21 52.45	21 50.19	23 40 56.8	40 57.9	7.7738	7.484	2.56		30 9 42.4
31.1	6 21 43.98	21 41.76	23 41 1.1	41 2.2	7.7657	7.472	2.57		31 9 38.3
Feb. 1.1	6 21 35.66	21 33.48	23 41 5.3	41 6.4	7.7572	7.459	2.58		1 9 34.2
2.1	6 21 27.51	21 25.38	23 41 9.4	41 10.4	7.7484	7.446	2.59		2 9 30.2
3.1	6 21 19.53	21 17.44	23 41 13.4	41 14.4	7.7392	7.432	2.60		3 9 26.1
4.1	6 21 11.72	21 9.67	23 41 17.2	41 18.2	7.7296	7.418	2.61		4 9 22.0
5.1	6 21 4.08	21 2.08	23 41 20.9	41 21.9	7.7197	7.403	2.62		5 9 18.0
6.1	6 20 56.61	20 54.63	23 41 24.5	41 25.4	7.7093	7.388	2.63		6 9 13.9
7.1	6 20 49.33	20 47.43	23 41 28.0	41 28.9	7.6985	7.373	2.63		7 9 9.9
8.1	6 20 42.23	20 40.38	23 41 31.4	41 32.2	7.6873	7.357	2.64		8 9 5.8
9.1	6 20 35.31	20 33.51	23 41 34.6	41 35.4	7.6757	7.340	2.65		9 9 1.8
10.1	6 20 28.58	20 26.83	23 41 37.7	41 38.5	7.6635	7.323	2.66		10 8 57.7
11.1	6 20 22.04	20 20.34	23 41 40.7	41 41.4	7.6508	7.306	2.67		11 8 53.7
12.1	6 20 15.69	20 14.05	23 41 43.5	41 44.2	7.6372	7.288	2.68		12 8 49.7
13.1	6 20 9.54	20 7.95	23 41 46.2	41 46.9	7.6230	7.268	2.69		13 8 45.6
14.1	6 20 3.60	20 2.06	23 41 48.8	41 49.4	7.6082	7.247	2.70		14 8 41.6
15.1	6 19 57.85	19 56.37	23 41 51.3	41 51.9	7.5930	7.225	2.71		15 8 37.6
16.1	6 19 52.31	19 50.88	23 41 53.6	41 54.2	7.5772	7.202	2.71		16 8 33.6
17.1	6 19 46.97	19 45.60	23 41 55.8	41 56.4	7.5605	7.178	2.72		17 8 29.5
18.1	6 19 41.84	19 40.53	23 41 57.9	41 58.5	7.5428	7.153	2.72		18 8 25.5
19.1	6 19 36.92	19 35.66	23 41 59.9	42 0.4	7.5242	7.127	2.72		19 8 21.5
20.1	6 19 32.22	19 31.01	23 42 1.8	42 2.2	7.5045	7.099	2.72		20 8 17.5
21.1	6 19 27.72	19 26.57	23 42 3.5	42 3.9	7.4838	7.069	2.73		21 8 13.5
22.1	6 19 23.44	19 22.35	23 42 5.2	42 5.5	7.4618	7.037	2.73		22 8 9.5
23.1	6 19 19.38	19 18.35	23 42 6.7	42 7.0	7.4384	7.004	2.73		23 8 5.5
24.1	6 19 15.54	19 14.57	23 42 8.1	42 8.4	7.4136	6.968	2.73		24 8 1.5
25.1	6 19 11.92	19 11.00	23 42 9.4	42 9.7	7.3873	6.929	2.73		25 7 57.5
26.1	6 19 8.51	19 7.66	23 42 10.5	42 10.8	7.3590	6.887	2.73		26 7 53.5
27.1	6 19 5.33	19 4.54	23 42 11.6	42 11.8	7.3285	6.841	2.73		27 7 49.6
28.1	6 19 2.38	19 1.64	23 42 12.5	42 12.7	7.2953	6.791	2.73		28 7 45.6
29.1	6 18 59.65	18 58.97	23 42 13.4	42 13.5	7.2594	6.733	2.73		29 7 41.6
30.1	6 18 57.15	18 56.53	+23 42 14.1	42 14.2	−7.2201	+6.663	+2.74		30 7 37.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1.1	6 18 59.65	18 58.97	+23 42 13.4	42 13.5	−7.2594	+6.733	+2.73		1 7 41.6
2.1	6 18 57.15	18 56.53	23 42 14.1	42 14.2	7.2201	6.663	2.74		2 7 37.6
3.1	6 18 54.87	18 54.31	23 42 14.7	42 14.8	7.1768	6.576	2.74		3 7 33.7
4.0	6 18 52.82	18 52.32	23 42 15.2	42 15.2	7.1281	6.464	2.74		4 7 29.7
5.0	6 18 51.00	18 50.56	23 42 15.5	42 15.6	7.0727	6.318	2.74		5 7 25.7
6.0	6 18 49.41	18 49.04	23 42 15.8	42 15.8	7.0090	6.120	2.74		6 7 21.8
7.0	6 18 48.06	18 47.74	23 42 15.9	42 15.9	6.9344	+5.686	2.74		7 7 17.8
8.0	6 18 46.94	18 46.68	23 42 15.9	42 15.9	6.8442		2.74		8 7 13.9
9.0	6 18 46.05	18 45.85	23 42 15.8	42 15.8	6.7301	−5.902	2.74		9 7 9.9
10.0	6 18 45.39	18 45.26	23 42 15.6	42 15.5	6.5740	6.229	2.74		10 7 6.0
11.0	6 18 44.97	18 44.90	23 42 15.3	42 15.2	6.3274	6.371	2.74		11 7 2.1
12.0	6 18 44.78	18 44.77	23 42 14.9	42 14.8	−5.6959	6.483	2.74		12 6 58.1
13.0	6 18 44.82	18 44.88	23 42 14.4	42 14.2	+6.0525	6.578	2.74		13 6 54.2
14.0	6 18 45.10	18 45.22	23 42 13.8	42 13.6	6.4421	6.664	2.74		14 6 50.2
15.0	6 18 45.62	18 45.80	23 42 13.1	42 12.8	6.6447	6.746	2.74		15 6 46.3
16.0	6 18 46.37	18 46.61	23 42 12.3	42 12.0	6.7813	6.814	2.74		16 6 42.4
17.0	6 18 47.36	18 47.66	23 42 11.4	42 11.1	6.8852	6.871	2.74		17 6 38.5
18.0	6 18 48.58	18 48.94	23 42 10.3	42 10.0	6.9686	6.922	2.74		18 6 34.6
19.0	6 18 50.04	18 50.46	23 42 9.2	42 8.9	7.0382	6.964	2.74		19 6 30.7
20.0	6 18 51.73	18 52.21	23 42 8.0	42 7.6	7.0985	6.996	2.74		20 6 26.8
21.0	6 18 53.65	18 54.20	23 42 6.7	42 6.3	7.1514	7.020	2.73		21 6 22.9
22.0	6 18 55.81	18 56.42	23 42 5.2	42 4.8	7.1986	7.042	2.73		22 6 19.0
23.0	6 18 58.20	18 58.87	23 42 3.7	42 3.2	7.2408	7.064	2.73		23 6 15.1
24.0	6 19 0.83	19 1.55	23 42 2.0	42 1.5	7.2784	7.087	2.73		24 6 11.2
25.0	6 19 3.67	19 4.46	23 42 0.2	41 59.7	7.3129	7.111	2.73		25 6 7.3
26.0	6 19 6.75	19 7.60	23 41 58.3	41 57.8	7.3452	7.134	2.73		26 6 3.4
27.0	6 19 10.05	19 10.96	23 41 56.3	41 55.8	7.3754	7.156	2.73		27 5 59.6
28.0	6 19 13.58	19 14.55	23 41 54.2	41 53.6	7.4034	7.178	2.73		28 5 55.7
29.0	6 19 17.34	19 18.37	23 41 52.0	41 51.3	7.4296	7.200	2.73		29 5 51.8
30.0	6 19 21.33	19 22.42	23 41 49.6	41 49.0	7.4542	7.222	2.73		30 5 48.0
31.0	6 19 25.54	19 26.69	23 41 47.2	41 46.5	7.4773	7.242	2.72		31 5 44.1
Apr. 1.0	6 19 29.97	19 31.18	23 41 44.6	41 44.0	7.4992	7.260	2.72		1 5 40.2
2.0	6 19 34.63	19 35.89	23 41 42.0	41 41.3	7.5200	7.277	2.72		2 5 36.4
3.0	6 19 39.51	19 40.83	23 41 39.2	41 38.5	7.5398	7.293	2.72		3 5 32.5
4.0	6 19 44.61	19 45.99	23 41 36.3	41 35.5	7.5588	7.310	2.72		4 5 28.7
5.0	6 19 49.93	19 51.38	23 41 33.3	41 32.5	7.5769	7.326	2.71		5 5 24.9
6.0	6 19 55.48	19 56.98	23 41 30.2	41 29.4	7.5940	7.342	2.71		6 5 21.0
7.0	6 20 1.24	20 2.80	23 41 27.0	41 26.1	7.6103	7.358	2.71		7 5 17.2
8.0	6 20 7.22	20 8.83	23 41 23.6	41 22.7	7.6259	7.373	2.70		8 5 13.4
8.9	6 20 13.41	20 15.08	23 41 20.2	41 19.2	7.6409	7.387	2.70		9 5 9.5
9.9	6 20 19.82	20 21.55	23 41 16.6	41 15.6	7.6552	7.401	2.70		10 5 5.7
10.9	6 20 26.44	20 28.22	23 41 12.9	41 11.9	7.6691	7.415	2.69		11 5 1.9
11.9	6 20 33.26	20 35.10	23 41 9.1	41 8.1	7.6824	7.428	2.69		12 4 58.1
12.9	6 20 40.30	20 42.19	23 41 5.2	41 4.1	7.6950	7.441	2.69		13 4 54.2
13.9	6 20 47.53	20 49.48	23 41 1.1	41 0.0	7.7071	7.453	2.68		14 4 50.4
14.9	6 20 54.97	20 54.97	23 40 57.0	40 55.8	7.7188	7.465	2.68		15 4 46.6
15.9	6 21 2.60	21 4.66	23 40 52.7	40 51.5	7.7302	7.477	2.68		16 4 42.8
16.9	6 21 10.44	21 12.55	23 40 48.3	40 47.1	7.7412	7.489	2.67		17 4 39.0
17.9	6 21 18.48	21 20.64	23 40 43.8	40 42.6	7.7519	7.501	2.67		18 4 35.2
18.9	6 21 26.71	21 28.92	23 40 39.2	40 37.9	7.7621	7.512	2.67		19 4 31.4
19.9	6 21 35.13	21 37.40	23 40 34.5	40 33.2	7.7720	7.523	2.66		20 4 27.6
20.9	6 21 43.75	21 46.07	23 40 29.6	40 28.3	7.7816	7.533	2.66		21 4 23.9
21.9	6 21 52.55	21 54.92	23 40 24.6	40 23.3	7.7910	7.543	2.65		22 4 20.1
22.9	6 22 1.55	22 3.97	23 40 19.5	40 18.1	7.8000	7.553	2.63		23 4 16.3
23.9	6 22 10.73	22 13.20	23 40 14.3	40 12.9	7.8088	7.563	2.64		24 4 12.5
24.9	6 22 20.09	22 22.61	23 40 9.0	40 7.6	7.8173	7.573	2.64		25 4 8.7
25.9	6 22 29.63	22 32.20	23 40 3.6	40 2.1	7.8255	7.583	2.63		26 4 5.0
26.9	6 22 39.36	22 41.97	23 39 58.1	39 56.5	7.8335	7.592	2.63		27 4 1.2
27.9	6 22 49.26	22 51.92	23 39 52.4	39 50.8	7.8413	7.601	2.62		28 3 57.4
28.9	6 22 59.34	23 2.05	23 39 46.6	39 45.0	7.8488	7.610	2.62		29 3 53.7
29.9	6 23 9.59	23 12.35	23 39 40.7	39 39.0	7.8560	7.619	2.61		30 3 49.9
30.9	6 23 20.01	23 22.81	+23 39 34.6	39 33.0	+7.8630	−7.628	+2.60		31 3 46.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
May 1.9	6 23 30.60	23 33.45	+23 39 28.5	39 26.8	+7.8699	−7.636	+2.59		2 3 42.4
2.9	6 23 41 35	23 44.25	23 39 22.2	39 20.5	7.8766	7.644	2.58		3 3 38.6
3.9	6 23 52.27	23 55.21	23 39 15.7	39 14.0	7.8831	7.653	2.58		4 3 34.9
4.9	6 24 3.35	24 6.34	23 39 9.1	39 7.4	7.8893	7.662	2.57		5 3 31.1
5.9	6 24 14.59	24 17.62	23 39 2.4	39 0.5	7.9954	7.670	2.56		6 3 27.4
6.9	6 24 25.98	24 29.06	23 38 55.6	38 53.7	7.9013	7.678	2.55		7 3 23.6
7.9	6 24 37.53	24 40.65	23 38 48.6	38 46.7	7.9070	7 686	2.55		8 3 19.9
8.9	6 24 49 23	24 52.39	23 38 41.5	38 39.6	7.9125	7.694	2.54		9 3 16.2
9.9	6 25 1.08	25 4.28	23 38 34.2	38 32.3	7.9179	7.702	2.53		10 3 12.4
10.9	6 25 13.07	25 16.31	23 38 26.9	38 24.9	7.9231	7.710	2.52		11 3 8.7
11.9	6 25 25.21	25 28.48	23 38 19.2	38 17.2	7.9282	7.718	2.51		12 3 5.0
12.9	6 25 37.48	25 40.80	23 38 11.7	38 9.6	7.9330	7.725	2.50		13 3 1.2
13.9	6 25 49.89	25 53.24	23 38 3.9	38 1.8	7.9377	7.733	2.49		14 2 57.5
14.9	6 26 2.44	26 5.82	23 37 56.0	37 53.8	7.9422	7.741	2.48		15 2 53.8
15.8	6 26 15.11	26 18.53	23 37 47.9	37 45.7	7.9467	7.748	2.47		16 2 50.1
16.8	6 26 27.91	26 31.37	23 37 39.7	37 37.5	7.9510	7.755	2.46		17 2 46.4
17.8	6 26 40.84	26 44.33	23 37 31.4	37 29.1	7.9552	7.762	2.46		18 2 42.6
18.8	6 26 53.89	26 57.41	23 37 23.0	37 20.6	7.9593	7.769	2.45		19 2 38.9
19.8	6 27 7.06	27 10.62	23 37 14.4	37 12.0	7.9632	7.776	2.44		20 2 35.2
20.8	6 27 20.35	27 23.94	23 37 5.7	37 3.3	7.9671	7.783	2.43		21 2 31.5
21.8	6 27 33.75	27 37.38	23 36 56.8	36 54.4	7.9708	7.790	2.42		22 2 27.8
22.8	6 27 47.27	27 50.94	23 36 47.8	36 45.3	7.9744	7.796	2.41		23 2 24.1
23.8	6 28 0.91	28 4.60	23 36 38.7	36 36.2	7.9779	7.803	2.40		24 2 20.4
24.8	6 28 14.65	28 18.37	23 36 29.4	36 26.9	7.9813	7.810	2.39		25 2 16.7
25.8	6 28 28.50	28 32.25	23 36 20.0	36 17.4	7.9846	7.816	2.38		26 2 13.0
26.8	6 28 42.45	28 46.23	23 36 10.5	36 7.9	7.9878	7.822	2.37		27 2 9.3
27.8	6 28 56.50	29 0.31	23 36 0.8	35 58.2	7.9908	7.828	2.36		28 2 5.6
28.8	6 29 10.65	29 14.49	23 35 51.0	35 48.4	7.9938	7.834	2.35		29 2 1.9
29.8	6 29 24.89	29 28.75	23 35 41.1	35 38.4	7.9966	7.840	2.34		30 1 58.2
30.8	6 29 39.22	29 43.11	23 35 31.1	35 28.4	7.9993	7.846	2.33		31 1 54.5
31.8	6 29 53.65	29 57.56	23 35 20.9	35 18.2	8.0020	7.852	2.32		1 1 50.8
June 1.8	6 30 8.15	30 12.09	23 35 10.6	35 7.8	8.0045	7.857	2.30		2 1 47.1
2.8	6 30 22.75	30 26.71	23 35 0.2	34 57.4	8.0069	7.863	2.28		3 1 43.4
3.8	6 30 37.42	30 41.40	23 34 49.7	34 46.8	8.0092	7.869	2.26		4 1 39.8
4.8	6 30 52.17	30 56.17	23 34 39.0	34 36.1	8.0114	7.874	2.24		5 1 36.1
5.8	6 31 6.99	31 11.02	23 34 28.2	34 25.2	8.0136	7.879	2.22		6 1 32.4
6.8	6 31 21.88	31 25.93	23 34 17.3	34 14.3	8.0157	7.884	2.20		7 1 28.7
7.8	6 31 36.84	31 40.91	23 34 6.2	34 3.2	8.0177	7.889	2.18		8 1 25.0
8.8	6 31 51.87	31 55.96	23 33 55.0	33 52.0	8.0195	7.894	2.16		9 1 21.3
9.8	6 32 6.95	32 11.07	23 33 43.7	33 40.6	8.0211	7.899	2.14		10 1 17.7
10.8	6 32 22.10	32 26.23	23 33 32.3	33 29.2	8.0227	7.904	2.11		11 1 14.0
11.8	6 32 37.30	32 41.45	23 33 20.8	33 17.6	8.0242	7.908	2.08		12 1 10.3
12.8	6 32 52.55	32 56.72	23 33 9.1	33 5.9	8.0257	7.913	+2.04		13 1 6.6
13.8	6 33 7.85	33 12.05	23 32 57.3	32 54.0	8.0271	7.917			14 1 2.9
14.8	6 33 23.20	33 27.41	23 32 45.4	32 42.1	8.0283	7.921			15 0 59.2
15.8	6 33 38.60	33 42.82	23 32 33.3	32 30.0	8.0294	7.925			16 0 55.6
16.8	6 33 54.03	33 58.27	23 32 21.2	32 17.8	8.0306	7.929			17 0 51.9
17.8	6 34 9.51	34 13.76	23 32 9.0	32 5.6	8.0317	7.933			18 0 48.2
18.8	6 34 25.02	34 29.28	23 31 56.6	31 53.2	8.0327	7.937			19 0 44.5
19.8	6 34 40.56	34 44.83	23 31 44.2	31 40.7	8.0336	7.940			20 0 40.9
20.8	6 34 56.13	35 0.41	23 31 31.6	31 28.1	8.0344	7.944			21 0 37.2
21.7	6 35 11.73	35 16.02	23 31 18.9	31 15.4	8.0351	7.947			22 0 33.5
22.7	6 35 27.36	35 31.65	23 31 6.1	31 2.5	8.0358	7.951			23 0 29.9
23.7	6 35 43.01	35 47.31	23 30 53.2	30 49.6	8.0363	7.954			24 0 26.2
24.7	6 35 58.67	36 2.98	23 30 40.2	30 36.6	8.0368	7.957			25 0 22.5
25.7	6 36 14.36	36 18.67	23 30 27.1	30 23.5	8.0372	7.960			26 0 18.9
26.7	6 36 30.05	36 34.37	23 30 14.0	30 10.3	8.0375	7.963			27 0 15.2
27.7	6 36 45.76	36 50.09	23 30 0.7	29 57.1	8.0378	7.966			28 0 11.5
28.7	6 37 1.47	37 5.81	23 29 47.4	29 43.7	8.0380	7.969			29 0 7.8
29.7	6 37 17.19	37 21.53	23 29 34.0	29 30.3	8.0381	7.972			30 0 4.2
30.7	6 37 32.91	37 37.25	23 29 20.5	29 16.7	8.0381	7.974			31 0 0.5
31.7	6 37 48.63	37 52.98	+23 29 6.9	29 3.1	+8.0380	−7.976			31 23 56.8

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
July 1.7	6 37 48.63	37 52.98	+23 29 6.9	29 3.1	+8.0380	−7.976			1 23 56.8
2.7	6 38 4.35	38 8.70	23 28 53.2	28 49.4	8.0379	7.979			2 23 53.2
3.7	6 38 20.06	38 24.41	23 28 39.5	28 35.6	8.0377	7.981			3 23 49.5
4.7	6 38 35.77	38 40.11	23 28 25.6	28 21.7	8.0374	7.983			4 23 45.8
5.7	6 38 51.46	38 55.80	23 28 11.8	28 7.9	8.0371	7.985			5 23 42.2
6.7	6 39 7.14	39 11.47	23 27 57.8	27 53.9	8.0366	7.987			6 23 38.5
7.7	6 39 22.79	39 27.13	23 27 43.8	27 39.9	8.0361	7.989			7 23 34.8
8.7	6 39 38.43	39 42.76	23 27 29.8	27 25.9	8.0355	7.991			8 23 31.1
9.7	6 39 54.05	39 58.37	23 27 15.7	27 11.7	8.0349	7.993			9 23 27.5
10.7	6 40 9.64	40 13.96	23 27 1.5	26 57.5	8.0340	7.995			10 23 23.8
11.7	6 40 25.19	40 29.51	23 26 47.2	26 43.3	8.0329	7.996			11 23 20.1
12.7	6 40 40.70	40 45.01	23 26 32.9	26 28.9	8.0318	7.998			12 23 16.4
13.7	6 40 56.18	41 0.48	23 26 18.6	26 14.5	8.0307	7.999			13 23 12.8
14.7	6 41 11.61	41 15.90	23 26 4.2	26 0.1	8.0295	8.000			14 23 9.1
15.7	6 41 27.00	41 31.28	23 25 49.8	25 45.7	8.0282	8.001			15 23 5.4
16.7	6 41 42.34	41 46.61	23 25 35.3	25 31.3	8.0268	8.002	−2.03		16 23 1.7
17.7	6 41 57.63	42 1.90	23 25 20.9	25 16.8	8.0254	8.002	2.07		17 22 58.0
18.7	6 42 12.87	42 17.12	23 25 6.4	25 2.3	8.0239	8.003	2.10		18 22 54.4
19.7	6 42 28.06	42 32.30	23 24 51.9	24 47.8	8.0222	8.003	2.12		19 22 50.7
20.7	6 42 43.19	42 47.41	23 24 37.3	24 33.3	8.0205	8.004	2.14		20 22 47.0
21.7	6 42 58.26	43 2.46	23 24 22.7	24 18.7	8.0188	8.005	2.16		21 22 43.3
22.7	6 43 13.27	43 17.46	23 24 8.1	24 4.1	8.0171	8.005	2.18		22 22 39.6
23.7	6 43 28.21	43 32.39	23 23 53.5	23 49.5	8.0152	8.005	2.19		23 22 36.0
24.7	6 43 43.09	43 47.26	23 23 38.9	23 34.9	8.0132	8.005	2.21		24 22 32.3
25.7	6 43 57.90	44 2.05	23 23 24.4	23 20.3	8.0111	8.005	2.23		25 22 28.6
26.7	6 44 12.64	44 16.77	23 23 9.8	23 5.7	8.0089	8.005	2.25		26 22 24.9
27.7	6 44 27.30	44 31.41	23 22 55.2	22 51.1	8.0066	8.004	2.26		27 22 21.2
28.6	6 44 41.88	44 45.97	23 22 40.6	22 36.6	8.0042	8.004	2.28		28 22 17.5
29.6	6 44 56.38	45 0.44	23 22 26.1	22 22.0	8.0017	8.003	2.30		29 22 13.8
30.6	6 45 10.80	45 14.84	23 22 11.6	22 7.5	7.9991	8.003	2.31		30 22 10.1
31.6	6 45 25.12	45 29.14	23 21 57.1	21 53.0	7.9963	8.002	2.33		31 22 6.4
Aug. 1.6	6 45 39.35	45 43.35	23 21 42.6	21 38.5	7.9933	8.001	2.34		1 22 2.7
2.6	6 45 53.49	45 57.46	23 21 28.1	21 24.1	7.9904	8.000	2.35		2 21 59.0
3.6	6 46 7.53	46 11.47	23 21 13.8	21 9.7	7.9874	7.998	2.37		3 21 55.3
4.6	6 46 21.47	46 25.38	23 20 59.5	20 55.4	7.9843	7.996	2.38		4 21 51.6
5.6	6 46 35.30	46 39.19	23 20 45.2	20 41.2	7.9810	7.994	2.39		5 21 47.9
6.6	6 46 49.03	46 52.89	23 20 31.0	20 27.0	7.9776	7.992	2.40		6 21 44.2
7.6	6 47 2.66	47 6.49	23 20 16.9	20 12.9	7.9742	7.990	2.41		7 21 40.5
8.6	6 47 16.17	47 19.97	23 20 2.8	19 58.8	7.9706	7.988	2.42		8 21 36.8
9.6	6 47 29.57	47 33.34	23 19 48.8	19 44.8	7.9669	7.986	2.43		9 21 33.1
10.6	6 47 42.85	47 46.59	23 19 34.8	19 30.9	7.9631	7.984	2.44		10 21 29.4
11.6	6 47 56.02	47 59.73	23 19 21.0	19 17.1	7.9592	7.982	2.45		11 21 25.7
12.6	6 48 9.07	48 12.75	23 19 7.2	19 3.3	7.9552	7.979	2.46		12 21 22.0
13.6	6 48 22.00	48 25.64	23 18 53.6	18 49.7	7.9510	7.976	2.47		13 21 18.3
14.6	6 48 34.80	48 38.41	23 18 40.0	18 36.1	7.9467	7.973	2.48		14 21 14.6
15.6	6 48 47.47	48 51.04	23 18 26.5	18 22.7	7.9423	7.970	2.49		15 21 10.9
16.6	6 49 0.01	49 3.55	23 18 13.2	18 9.4	7.9378	7.967	2.49		16 21 7.1
17.6	6 49 12.42	49 15.93	23 17 59.9	17 56.2	7.9331	7.964	2.50		17 21 3.4
18.6	6 49 24.70	49 28.16	23 17 46.8	17 43.0	7.9282	7.960	2.51		18 20 59.7
19.6	6 49 36.83	49 40.26	23 17 33.7	17 30.0	7.9231	7.956	2.52		19 20 55.9
20.6	6 49 48.83	49 52.21	23 17 20.8	17 17.1	7.9179	7.952	2.53		20 20 52.2
21.6	6 50 0.68	50 4.03	23 17 7.9	17 4.2	7.9126	7.948	2.53		21 20 48.5
22.6	6 50 12.38	50 15.69	23 16 55.1	16 51.5	7.9071	7.943	2.54		22 20 44.7
23.6	6 50 23.93	50 27.20	23 16 42.5	16 39.0	7.9015	7.938	2.55		23 20 41.0
24.6	6 50 35.34	50 38.56	23 16 30.1	16 26.6	7.8957	7.933	2.56		24 20 37.2
25.6	6 50 46.59	50 49.77	23 16 17.8	16 14.3	7.8897	7.928	2.57		25 20 33.5
26.6	6 50 57.68	51 0.82	23 16 5.7	16 2.3	7.8835	7.922	2.57		26 20 29.7
27.6	6 51 8.61	51 11.71	23 15 53.7	15 50.3	7.8772	7.916	2.58		27 20 26.0
28.6	6 51 19.38	51 22.43	23 15 41.9	15 38.5	7.8706	7.910	2.59		28 20 22.2
29.6	6 51 29.99	51 32.99	23 15 30.2	15 26.9	7.8638	7.904	2.60		29 20 18.5
30.6	6 51 40.43	51 43.39	23 15 18.7	15 15.5	7.8568	7.897	2.60		30 20 14.7
31.6	6 51 50.70	51 53.61	+23 15 7.4	15 4.3	+7.8495	−7.890	−2.61		31 20 11.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1.6	6 52 0.80	52 3.66	+23 14 56.4	14 53.2	+7.8421	−7.883	−2.62		1 20 7.2
2.6	6 52 10.72	52 13.53	23 14 45.5	14 42.4	7.8345	7.875	2.63		2 20 3.4
3.5	6 52 20.47	52 23.23	23 14 34.8	14 31.8	7.8266	7.867	2.63		3 19 59.7
4.5	6 52 30.04	52 32.75	23 14 24.4	14 21.4	7.8185	7.859	2.64		4 19 55.9
5.5	6 52 39.43	52 42.09	23 14 14.1	14 11.2	7.8101	7.850	2.64		5 19 52.1
6.5	6 52 48.64	52 51.25	23 14 4.1	14 1.2	7.8014	7.841	2.65		6 19 48.3
7.5	6 52 57.66	53 0.22	23 13 54.2	13 51.4	7.7925	7.832	2.65		7 19 44.5
8.5	6 53 6.50	53 9.00	23 13 44.6	13 41.8	7.7833	7.823	2.66		8 19 40.8
9.5	6 53 15.15	53 17.60	23 13 35.1	13 32.5	7.7739	7.813	2.66		9 19 37.0
10.5	6 53 23.62	53 26.01	23 13 25.9	13 23.3	7.7642	7.802	2.67		10 19 33.2
11.5	6 53 31.89	53 34.23	23 13 16.8	13 14.3	7.7542	7.791	2.67		11 19 29.4
12.5	6 53 39.97	53 42.25	23 13 8.0	13 5.6	7.7438	7.780	2.68		12 19 25.6
13.5	6 53 47.85	53 50.08	23 12 59.5	12 57.1	7.7329	7.769	2.68		13 19 21.8
14.5	6 53 55.54	53 57.71	23 12 51.1	12 48.8	7.7217	7.757	2.68		14 19 18.0
15.5	6 54 3.02	54 5.14	23 12 43.0	12 40.8	7.7101	7.744	2.69		15 19 14.1
16.5	6 54 10.31	54 12.37	23 12 35.2	12 33.0	7.6981	7.730	2.69		16 19 10.3
17.5	6 54 17.40	54 19.40	23 12 27.6	12 25.5	7.6858	7.716	2.69		17 19 6.5
18.5	6 54 24.28	54 26.22	23 12 20.2	12 18.2	7.6728	7.700	2.70		18 19 2.7
19.5	6 54 30.95	54 32.84	23 12 13.1	12 11.1	7.6593	7.683	2.70		19 18 58.9
20.5	6 54 37.42	54 39.25	23 12 6.2	12 4.3	7.6451	7.665	2.70		20 18 55.1
21.5	6 54 43.68	54 45.44	23 11 59.7	11 57.8	7.6305	7.646	2.71		21 18 51.3
22.5	6 54 49.72	54 51.43	23 11 53.4	11 51.6	7.6153	7.627	2.71		22 18 47.4
23.5	6 54 55.55	54 57.19	23 11 47.4	11 45.7	7.5993	7.607	2.71		23 18 43.6
24.5	6 55 1.17	55 2.74	23 11 41.6	11 40.1	7.5828	7.586	2.71		24 18 39.7
25.5	6 55 6.57	55 8.08	23 11 36.2	11 34.7	7.5653	7.563	2.72		25 18 35.9
26.5	6 55 11.75	55 13.20	23 11 31.0	11 29.6	7.5470	7.539	2.72		26 18 32.0
27.5	6 55 16.72	55 18.11	23 11 26.1	11 24.8	7.5278	7.514	2.72		27 18 28.2
28.5	6 55 21.46	55 22.79	23 11 21.5	11 20.3	7.5077	7.489	2.72		28 18 24.3
29.5	6 55 25.99	55 27.25	23 11 17.2	11 16.0	7.4863	7.463	2.72		29 18 20.5
30.5	6 55 30.29	55 31.49	23 11 13.1	11 12.0	7.4636	7.434	2.73		30 18 16.6
Oct. 1.5	6 55 34.37	55 35.50	23 11 9.4	11 8.4	7.4396	7.401	2.73		1 18 12.8
2.5	6 55 38.22	55 39.28	23 11 6.0	11 5.1	7.4141	7.362	2.73		2 18 8.9
3.5	6 55 41.84	55 42.84	23 11 2.9	11 2.1	7.3870	7.315	2.73		3 18 5.0
4.5	6 55 45.24	55 46.17	23 11 0.1	10 59.3	7.3581	7.258	2.73		4 18 1.1
5.5	6 55 48.41	55 49.28	23 10 57.6	10 56.9	7.3272	7.194	2.73		5 17 57.3
6.5	6 55 51.35	55 52.16	23 10 55.3	10 54.7	7.2936	7.128	2.73		6 17 53.4
7.5	6 55 54.07	55 54.81	23 10 53.4	10 52.9	7.2569	7.060	2.73		7 17 49.5
8.5	6 55 56.56	55 57.23	23 10 51.7	10 51.3	7.2168	6.990	2.73		8 17 45.6
9.4	6 55 58.82	55 59.42	23 10 50.4	10 50.1	7.1726	6.910	2.73		9 17 41.7
10.4	6 56 0.84	56 1.39	23 10 49.3	10 49.1	7.1232	6.795	2.73		10 17 37.8
11.4	6 56 2.64	56 3.12	23 10 48.6	10 48.5	7.0678	6.612	2.74		11 17 33.9
12.4	6 56 4.21	56 4.62	23 10 48.2	10 48.2	7.0039	−6.288	2.74		12 17 30.0
13.4	6 56 5.55	56 5.89	23 10 48.0	10 48.1	6.9287		2.74		13 17 26.1
14.4	6 56 6.66	56 6.93	23 10 48.2	10 48.4	6.8377	+6.372	2.74		14 17 22.1
15.4	6 56 7.53	56 7.74	23 10 48.7	10 49.0	6.7224	6.647	2.74		15 17 18.2
16.4	6 56 8.18	56 8.32	23 10 49.5	10 49.8	6.5643	6.816	2.74		16 17 14.3
17.4	6 56 8.59	56 8.66	23 10 50.6	10 51.0	6.3137	6.938	2.74		17 17 10.4
18.4	6 56 8.77	56 8.77	23 10 52.0	10 52.5	+5.6410	7.036	2.74		18 17 6.5
19.4	6 56 8.71	56 8.65	23 10 53.7	10 54.3	−6.0746	7.120	2.74		19 17 2.6
20.4	6 56 8.43	56 8.30	23 10 55.8	10 56.5	6.4469	7.187	2.74		20 16 58.6
21.4	6 56 7.91	56 7.72	23 10 58.2	10 59.0	6.6444	7.246	2.74		21 16 54.7
22.4	6 56 7.16	56 6.89	23 11 0.8	11 1.7	6.7798	7.296	2.74		22 16 50.7
23.4	6 56 6.17	56 5.84	23 11 3.8	11 4.8	6.8830	7.337	2.74		23 16 46.8
24.4	6 56 4.96	56 4.56	23 11 7.1	11 8.1	6.9653	7.374	2.74		24 16 42.8
25.4	6 56 3.51	56 3.05	23 11 10.6	11 11.8	7.0344	7.409	2.74		25 16 38.9
26.4	6 56 1.84	56 1.31	23 11 14.5	11 15.7	7.0942	7.442	2.73		26 16 34.9
27.4	6 55 59.94	55 59.34	23 11 18.7	11 20.0	7.1463	7.474	2.73		27 16 30.9
28.4	6 55 57.81	55 57.15	23 11 23.1	11 24.5	7.1927	7.505	2.73		28 16 27.0
29.4	6 55 55.45	55 54.72	23 11 27.9	11 29.4	7.2349	7.534	2.73		29 16 23.0
30.4	6 55 52.86	55 52.07	23 11 33.0	11 34.6	7.2730	7.558	2.73		30 16 19.0
31.4	6 55 50.04	55 49.19	23 11 38.4	11 40.1	7.3080	7.581	2.73		31 16 15.0
32.4	6 55 47.00	55 46.08	+23 11 44.1	11 45.9	−7.3402	+7.603	−2.73		32 16 11.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1.4	6 55 47.00	55 46.08	+23 11 44.1	11 45.9	−7.3402	+7.603	−2.73		1 16 11.1
2.4	6 55 43.74	55 42.75	23 11 50.1	11 51.9	7.3699	7.624	2.72		2 16 7.1
3.4	6 55 40.25	55 39.20	23 11 56.3	11 58.2	7.3975	7.644	2.72		3 16 3.1
4.4	6 55 36.55	55 35.44	23 12 2.8	12 4.8	7.4231	7.663	2.72		4 15 59.1
5.4	6 55 32.63	55 31.45	23 12 9.6	12 11.7	7.4472	7.681	2.72		5 15 55.1
6.4	6 55 28.49	55 27.25	23 12 16.7	12 18.8	7.4699	7.698	2.72		6 15 51.1
7.4	6 55 24.13	55 22.83	23 12 24.0	12 26.2	7.4912	7.714	2.71		7 15 47.1
8.4	6 55 19.56	55 18.20	23 12 31.6	12 33.9	7.5112	7.730	2.71		8 15 43.1
9.4	6 55 14.79	55 13.37	23 12 39.5	12 41.8	7.5300	7.745	2.71		9 15 39.1
10.4	6 55 9.80	55 8.32	23 12 47.6	12 50.0	7.5481	7.758	2.70		10 15 35.0
11.4	6 55 4.61	55 3.07	23 12 55.9	12 58.3	7.5655	7.771	2.70		11 15 31.0
12.4	6 54 59.21	54 57.62	23 13 4.5	13 7.0	7.5820	7.783	2.69		12 15 27.0
13.4	6 54 53.61	54 51.96	23 13 13.2	13 15.9	7.5977	7.795	2.69		13 15 23.0
14.4	6 54 47.81	54 46.10	23 13 22.3	13 25.0	7.6125	7.806	2.69		14 15 18.9
15.3	6 54 41.82	54 40.05	23 13 31.5	13 34.3	7.6267	7.816	2.68		15 15 14.9
16.3	6 54 35.62	54 33.80	23 13 41.0	13 43.9	7.6404	7.826	2.68		16 15 10.9
17.3	6 54 29.23	54 27.35	23 13 50.8	13 53.7	7.6536	7.836	2.67		17 15 6.8
18.3	6 54 22.65	54 20.72	23 13 0.7	14 3.7	7.6662	7.845	2.67		18 15 2.8
19.3	6 54 15.83	54 13.90	23 14 11.0	14 14.0	7.6783	7.854	2.66		19 14 58.7
20.3	6 54 8.92	54 6.88	23 14 21.4	14 24.4	7.6899	7.862	2.66		20 14 54.7
21.3	6 54 1.78	53 59.69	23 14 32.0	14 35.1	7.7011	7.870	2.65		21 14 50.6
22.3	6 53 54.45	53 52.31	23 14 42.7	14 45.9	7.7117	7.878	2.65		22 14 46.6
23.3	6 53 46.95	53 44.76	23 14 53.7	14 56.9	7.7218	7.885	2.64		23 14 42.5
24.3	6 53 39.27	53 37.04	23 15 4.8	15 8.1	7.7316	7.892	2.63		24 14 38.5
25.3	6 53 31.42	53 29.14	23 15 16.1	15 19.5	7.7411	7.899	2.62		25 14 34.4
26.3	6 53 23.41	53 21.08	23 15 27.6	15 31.0	7.7501	7.906	2.61		26 14 30.3
27.3	6 53 15.23	53 12.85	23 15 39.3	15 42.7	7.7587	7.912	2.60		27 14 26.3
28.3	6 53 6.89	53 4.46	23 15 51.2	15 54.7	7.7670	7.918	2.59		28 14 22.2
29.3	6 52 58.39	52 55.92	23 16 3.3	16 6.8	7.7747	7.923	2.58		29 14 18.1
30.3	6 52 49.74	52 47.23	23 16 15.4	16 19.0	7.7823	7.928	2.57		30 14 14.1
Dec. 1.3	6 52 40.94	52 38.39	23 16 27.7	16 31.3	7.7897	7.933	2.55		1 14 10.0
2.3	6 52 32.00	52 29.40	23 16 40.2	16 43.8	7.7966	7.938	2.54		2 14 5.9
3.3	6 52 22.91	52 20.28	23 16 52.7	16 56.4	7.8033	7.942	2.52		3 14 1.8
4.3	6 52 13.69	52 11.02	23 17 5.4	17 9.1	7.8097	7.946	2.51		4 13 57.7
5.3	6 52 4.33	52 1.62	23 17 18.1	17 21.9	7.8158	7.950	2.49		5 13 53.7
6.3	6 51 54.84	51 52.10	23 17 31.0	17 34.8	7.8216	7.954	2.48		6 13 49.6
7.3	6 51 45.23	51 42.46	23 17 44.0	17 47.8	7.8272	7.957	2.46		7 13 45.5
8.3	6 51 35.50	51 32.69	23 17 57.2	18 0.9	7.8325	7.960	2.45		8 13 41.4
9.3	6 51 25.65	51 22.81	23 18 10.3	18 14.1	7.8375	7.962	2.43		9 13 37.3
10.3	6 51 15.68	51 12.82	23 18 23.6	18 27.4	7.8422	7.964	2.41		10 13 33.2
11.3	6 51 5.61	51 2.72	23 18 36.9	18 40.7	7.8468	7.966	2.40		11 13 29.1
12.3	6 50 55.44	50 52.52	23 18 50.2	18 54.1	7.8511	7.968	2.38		12 13 25.0
13.3	6 50 45.17	50 42.22	23 19 3.6	19 7.5	7.8552	7.970	2.36		13 13 20.9
14.3	6 50 34.80	50 31.83	23 19 17.1	19 21.0	7.8591	7.972	2.34		14 13 16.7
15.3	6 50 24.35	50 21.35	23 19 30.6	19 34.5	7.8628	7.973	2.32		15 13 12.6
16.3	6 50 13.81	50 11.79	23 19 44.2	19 48.0	7.8662	7.974	2.30		16 13 8.5
17.3	6 50 3.18	50 1.14	23 19 57.8	20 1.6	7.8695	7.975	2.27		17 13 4.4
18.3	6 49 52.48	49 49.42	23 20 11.4	20 15.3	7.8725	7.976	2.24		18 13 0.3
19.3	6 49 41.71	49 38.63	23 20 25.1	20 29.0	7.8754	7.976	2.21		19 12 56.2
20.3	6 49 30.87	49 27.77	23 20 38.7	20 42.6	7.8780	7.976	2.18		20 12 52.1
21.2	6 49 19.96	49 16.85	23 20 52.3	20 56.2	7.8804	7.977	2.14		21 12 48.0
22.2	6 49 9.00	49 5.88	23 21 5.9	21 9.8	7.8826	7.977	2.10		22 12 43.9
23.2	6 48 57.98	48 54.85	23 21 19.5	21 23.4	7.8846	7.977	2.06		23 12 39.8
24.2	6 48 46.92	48 43.77	23 21 33.1	21 37.0	7.8864	7.976	−2.01		24 12 35.6
25.2	6 48 35.81	48 32.65	23 21 46.7	21 50.6	7.8880	7.976			25 12 31.5
26.2	6 48 24.67	48 21.50	23 22 0.3	22 4.2	7.8894	7.975			26 12 27.4
27.2	6 48 13.49	48 10.31	23 22 13.9	22 17.8	7.8906	7.974			27 12 23.3
28.2	6 48 2.28	47 59.09	23 22 27.5	22 31.4	7.8916	7.973			28 12 19.2
29.2	6 47 51.05	47 47.85	23 22 41.1	22 44.9	7.8923	7.971			29 12 15.0
30.2	6 47 39.80	47 36.60	23 22 54.5	22 58.4	7.8927	7.968			30 12 10.9
31.2	6 47 28.55	47 25.34	23 23 7.9	23 11.7	7.8928	7.964			31 12 6.8
32.2	6 47 17.30	47 14.09	+23 23 21.1	23 24.9	−7.8925	+7.960			32 12 2.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Jan. 0.2	0 39 28.94	39 28.97	+ 2 32 49.3	32 49.6	+6.9437	+7.895	+2.49	+3.29	0 5 59.0
1.2	0 39 30.25	39 30.28	2 33 0.9	33 1.2	6.9784	7.924	2.49	3.29	1 5 55.0
2.2	0 39 31.69	39 31.73	2 33 13.3	33 13.6	7.0191	7.948	2.49	3.29	2 5 51.1
3.2	0 39 33.26	39 33.30	2 33 26.6	33 27.0	7.0551	7.975	2.49	3.29	3 5 47.2
4.2	0 39 34.96	39 35.01	2 33 40.7	33 41.1	7.0883	8.000	2.49	3.29	4 5 43.3
5.2	0 39 36.79	39 36.84	2 33 55.6	33 56.0	7.1204	8.023	2.49	3.29	5 5 39.4
6.2	0 39 38.75	39 38.80	2 34 11.3	34 11.7	7.1470	8.046	2.49	3.29	6 5 35.5
7.2	0 39 40.83	39 40.89	2 34 27.8	34 28.3	7.1710	8.067	2.48	3.28	7 5 31.6
8.2	0 39 43.03	39 43.09	2 34 45.0	34 45.5	7.1967	8.087	2.48	3.28	8 5 27.7
9.2	0 39 45.37	39 45.43	2 35 3.1	35 3.6	7.2218	8.106	2.48	3.28	9 5 23.8
10.2	0 39 47.83	39 47.90	2 35 21.9	35 22.4	7.2430	8.125	2.48	3.28	10 5 19.9
11.2	0 39 50.41	39 50.48	2 35 41.5	35 42.1	7.2644	8.143	2.47	3.27	11 5 16.0
12.2	0 39 53.11	39 53.19	2 36 1.9	36 2.5	7.2841	8.160	2.47	3.27	12 5 12.1
13.2	0 39 55.94	39 56.02	2 36 23.1	36 23.7	7.3025	8.175	2.47	3.27	13 5 8.2
14.2	0 39 58.89	39 58.97	2 36 45.0	36 45.6	7.3202	8.189	2.47	3.27	14 5 4.3
15.2	0 40 1.96	40 2.05	2 37 7.6	37 8.3	7.3378	8.203	2.46	3.26	15 5 0.5
16.2	0 40 5.15	40 5.24	2 37 31.0	37 31.7	7.3521	8.218	2.46	3.26	16 4 56.7
17.2	0 40 8.45	40 8.54	2 37 55.1	37 55.8	7.3679	8.231	2.46	3.26	17 4 52.8
18.2	0 40 11.87	40 11.97	2 38 20.0	38 20.7	7.3832	8.244	2.45	3.25	18 4 48.9
19.2	0 40 15.41	40 15.51	2 38 45.6	38 46.3	7.3979	8.256	2.45	3.25	19 4 45.0
20.2	0 40 19.07	40 19.18	2 39 11.9	39 12.6	7.4127	8.268	2.44	3.24	20 4 41.1
21.2	0 40 22.85	40 22.96	2 39 39.0	39 39.8	7.4248	8.280	2.44	3.24	21 4 37.3
22.2	0 40 26.74	40 26.85	2 40 6.8	40 7.6	7.4387	8.291	2.44	3.23	22 4 33.4
23.2	0 40 30.75	40 30.87	2 40 35.3	40 36.1	7.4506	8.302	2.43	3.23	23 4 29.5
24.2	0 40 34.87	40 34.99	2 41 4.4	41 5.2	7.4622	8.312	2.43	3.22	24 4 25.7
25.2	0 40 39.11	40 39.23	2 41 34.3	41 35.1	7.4735	8.322	2.42	3.22	25 4 21.8
26.1	0 40 43.45	40 43.58	2 42 4.8	42 5.6	7.4846	8.332	2.42	3.21	26 4 18.0
27.1	0 40 47.90	40 48.03	2 42 36.0	42 36.9	7.4953	8.341	2.41	3.21	27 4 14.1
28.1	0 40 52.46	40 52.59	2 43 7.9	43 8.8	7.5058	8.350	2.41	3.20	28 4 10.3
29.1	0 40 57.13	40 57.26	2 43 40.5	43 41.4	7.5160	8.359	2.40	3.20	29 4 6.4
30.1	0 41 1.91	41 2.05	2 44 13.7	44 14.6	7.5264	8.367	2.40	3.19	30 4 2.6
31.1	0 41 6.80	41 6.94	2 44 47.5	44 48.5	7.5358	8.375	2.39	3.19	31 3 58.7
Feb. 1.1	0 41 11.79	41 11.93	2 45 21.9	45 22.9	7.5449	8.383	2.39	3.18	1 3 54.9
2.1	0 41 16.89	41 17.04	2 45 57.0	45 58.0	7.5538	8.391	2.38	3.18	2 3 51.0
3.1	0 41 22.09	41 22.94	2 46 32.7	46 33.7	7.5609	8.398	2.38	3.17	3 3 47.2
4.1	0 41 27.38	41 27.53	2 47 9.0	47 10.1	7.5691	8.405	2.37	3.17	4 3 43.3
5.1	0 41 32.77	41 32.93	2 47 45.8	47 46.9	7.5772	8.412	2.37	3.16	5 3 39.5
6.1	0 41 38.27	41 38.43	2 48 23.3	48 24.4	7.5851	8.419	2.36	3.16	6 3 35.6
7.1	0 41 43.86	41 44.02	2 49 1.4	49 2.5	7.5933	8.426	2.36	3.15	7 3 31.8
8.1	0 41 49.55	41 49.72	2 49 40.0	49 41.2	7.6002	8.432	2.35	3.14	8 3 28.0
9.1	0 41 55.33	41 55.50	2 50 19.2	50 20.4	7.6069	8.438	2.35	3.13	9 3 24.2
10.1	0 42 1.21	42 1.38	2 50 59.0	51 0.2	7.6136	8.444	2.34	3.13	10 3 20.3
11.1	0 42 7.17	42 7.34	2 51 39.3	51 40.5	7.6202	8.450	2.34	3.12	11 3 16.5
12.1	0 42 13.22	42 13.40	2 52 20.1	52 21.3	7.6266	8.455	2.33	3.11	12 3 12.6
13.1	0 42 19.36	42 19.54	2 53 1.4	53 2.6	7.6333	8.460	2.32	3.10	13 3 8.8
14.1	0 42 25.59	42 25.77	2 53 43.2	53 44.5	7.6389	8.465	2.32	3.09	14 3 4.9
15.1	0 42 31.91	42 32.09	2 54 25.5	54 26.8	7.6444	8.470	2.31	3.08	15 3 1.1
16.1	0 42 38.30	42 38.49	2 55 8.3	55 9.6	7.6498	8.475	2.30	3.07	16 2 57.3
17.1	0 42 44.77	42 44.96	2 55 51.5	55 52.8	7.6552	8.480	2.29	3.06	17 2 53.5
18.1	0 42 51.33	42 51.52	2 56 35.2	56 36.5	7.6605	8.485	2.29	3.05	18 2 49.6
19.1	0 42 57.96	42 58.16	2 57 19.4	57 20.7	7.6657	8.489	2.28	3.04	19 2 45.8
20.1	0 43 4.67	43 4.87	2 58 4.0	58 5.3	7.6710	8.493	2.27	3.03	20 2 42.0
21.1	0 43 11.46	43 11.66	2 58 49.0	58 50.3	7.6757	8.497	2.26	3.02	21 2 38.2
22.1	0 43 18.32	43 18.53	2 59 34.5	59 35.9	7.6801	8.501	2.25	3.01	22 2 34.4
23.1	0 43 25.26	43 25.47	3 0 20.4	0 21.8	7.6845	8.505	2.24	3.00	23 2 30.6
24.1	0 43 32.26	43 32.48	3 1 6.6	1 8.0	7.6889	8.509	2.23	2.99	24 2 26.8
25.1	0 43 39.33	43 39.55	3 1 53.2	1 54.6	7.6932	8.512	2.22	2.98	25 2 23.0
26.1	0 43 46.48	43 46.70	3 2 40.3	2 41.7	7.6977	8.516	2.21	2.97	26 2 19.1
27.1	0 43 53.69	43 53.91	3 3 27.7	3 29.1	7.7013	8.519	2.20	2.96	27 2 15.3
28.1	0 44 0.96	44 1.18	3 4 15.4	4 16.8	7.7046	8.522	2.19	2.95	28 2 11.5
29.1	0 44 8.29	44 8.52	3 5 3.4	5 4.9	7.7091	8.525	2.18	2.94	29 2 7.7
30.1	0 44 15.69	44 15.92	+ 3 5 51.8	5 53.3	+7.7129	+8.528	+2.17	+2.92	30 2 3.9

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Mar. 1.1	0 44 8.29	44 8.52	+ 3 5 3.4	5 4.9	+7.7091	+8.525	+2.18	+2.94	1 2 7.7
2.1	0 44 15.69	44 15.92	3 5 51.8	5 53.3	7.7129	8.528	2.17	2.92	2 2 3.9
3.1	0 44 23.15	44 23.38	3 6 40.5	6 42.0	7.7158	8.531	2.16	2.89	3 2 0.1
4.0	0 44 30.66	44 30.89	3 7 29.5	7 31.0	7.7184	8.534	2.15	2.87	4 1 56.3
5.0	0 44 38.22	44 38.45	3 8 18.8	8 20.3	7.7221	8.536	2.13	2.84	5 1 52.5
6.0	0 44 45.84	44 46.07	3 9 8.5	9 10.0	7.7250	8.539	2.12	2.82	6 1 48.7
7.0	0 44 53.51	44 53.75	3 9 59.4	10 0.9	7.7278	8.541	2.10	2.79	7 1 44.9
8.0	0 45 1.23	45 1.47	3 10 48.6	10 50.1	7.7304	8.543	2.09	2.77	8 1 41.1
9.0	0 45 9.00	45 9.24	3 11 39.0	11 40.5	7.7329	8.545	2.07	2.74	9 1 37.3
10.0	0 45 16.81	45 17.05	3 12 29.6	12 31.2	7.7359	8.547	2.05	2.72	10 1 33.5
11.0	0 45 24.67	45 24.91	3 13 20.5	13 22.1	7.7381	8.549	2.03	2.70	11 1 29.7
12.0	0 45 32.57	45 32.82	3 14 11.5	14 13.1	7.7403	8.551	2.01	2.67	12 1 25.9
13.0	0 45 40.50	45 40.75	3 15 2.7	15 4.3	7.7425	8.552	1.99	+2.64	13 1 22.1
14.0	0 45 48.48	45 48.73	3 15 54.2	15 55.8	7.7446	8.554	1.97		14 1 18.3
15.0	0 45 56.50	45 56.75	3 16 45.8	16 47.4	7.7466	8.555	1.94		15 1 14.5
16.0	0 46 4.55	46 4.81	3 17 37.5	17 39.1	7.7485	8.557	1.92		16 1 10.7
17.0	0 46 12.63	46 12.89	3 18 29.4	18 31.0	7.7504	8.558	1.89		17 1 6.9
18.0	0 46 20.75	46 21.01	3 19 21.5	19 23.2	7.7522	8.559	1.87		18 1 3.1
19.0	0 46 28.90	46 29.16	3 20 13.7	20 15.4	7.7533	8.560	1.84		19 0 59.3
20.0	0 46 37.07	46 37.34	3 21 6.0	21 7.7	7.7541	8.561	1.81		20 0 55.5
21.0	0 46 45.26	46 45.53	3 21 58.4	22 0.1	7.7559	8.561	1.78		21 0 51.7
22.0	0 46 53.48	46 53.75	3 22 50.8	22 52.5	7.7570	8.561	1.76		22 0 47.9
23.0	0 47 1.73	47 2.00	3 23 43.3	23 45.0	7.7581	8.562	1.73		23 0 44.1
24.0	0 47 9.99	47 10.26	3 24 35.9	24 37.6	7.7591	8.563	1.71		24 0 40.3
25.0	0 47 18.27	47 18.54	3 25 28.5	25 30.2	7.7602	8.563	1.69		25 0 36.5
26.0	0 47 26.57	47 26.85	3 26 21.2	26 23.0	7.7612	8.564	+1.66		26 0 32.7
27.0	0 47 34.89	47 35.17	3 27 14.0	27 15.8	7.7620	8.564			27 0 28.9
28.0	0 47 43.22	47 43.50	3 28 6.8	28 8.6	7.7625	8.565			28 0 25.1
29.0	0 47 51.56	47 51.84	3 28 59.6	29 1.4	7.7631	8.565			29 0 21.4
30.0	0 47 59.91	48 0.19	3 29 52.4	29 54.2	7.7636	8.565			30 0 17.6
31.0	0 48 8.27	48 8.55	3 30 45.3	30 47.1	7.7641	8.565			31 0 13.8
Apr. 1.0	0 48 16.64	48 16.92	3 31 38.1	31 39.9	7.7646	8.564			1 0 10.0
2.0	0 48 25.01	48 25.29	3 32 30.9	32 32.7	7.7648	8.564			2 0 6.2
3.0	0 48 33.39	48 33.67	3 33 23.6	33 25.4	7.7648	8.563			3 0 2.4
4.0	0 48 41.77	48 42.05	3 34 16.3	34 18.1	7.7646	8.563			3 23 58.6
5.0	0 48 50.14	48 50.42	3 35 8.9	35 10.7	7.7641	8.562			4 23 54.8
6.0	0 48 58.50	48 58.79	3 36 1.3	36 3.1	7.7636	8.561			5 23 51.0
7.0	0 49 6.85	49 7.14	3 36 53.7	36 55.5	7.7633	8.560			6 23 47.2
8.0	0 49 15.20	49 15.49	3 37 45.9	37 47.7	7.7630	8.559			7 23 43.4
8.9	0 49 23.54	49 23.83	3 38 38.0	38 39.8	7.7625	8.558			8 23 39.6
9.9	0 49 31.87	49 32.16	3 39 30.0	39 31.8	7.7620	8.557			9 23 35.8
10.9	0 49 40.19	49 40.48	3 40 21.8	40 23.6	7.7615	8.555		−2.63	10 23 32.0
11.9	0 49 48.50	49 48.79	3 41 13.5	41 15.3	7.7606	8.554		2.66	11 23 28.2
12.9	0 49 56.79	49 57.08	3 42 5.0	42 6.8	7.7596	8.553		2.68	12 23 24.4
13.9	0 50 5.06	50 5.35	3 42 56.3	42 58.1	7.7586	8.552		2.71	13 23 20.6
14.9	0 50 13.31	50 13.60	3 43 47.5	43 49.3	7.7575	8.550	−1.70	2.73	14 23 16.9
15.9	0 50 21.53	50 21.82	3 44 38.5	44 40.3	7.7563	8.548	1.74	2.75	15 23 13.1
16.9	0 50 29.73	50 30.02	3 45 29.2	45 31.0	7.7551	8.546	1.78	2.77	16 23 9.3
17.9	0 50 37.91	50 38.20	3 46 19.7	46 21.5	7.7538	8.544	1.82	2.79	17 23 5.5
18.9	0 50 46.06	50 46.35	3 47 10.0	47 11.7	7.7525	8.542	1.85	2.80	18 23 1.7
19.9	0 50 54.19	50 54.48	3 48 0.0	48 1.7	7.7508	8.540	1.88	2.81	19 22 57.9
20.9	0 51 2.29	51 2.58	3 48 49.8	48 51.5	7.7490	8.538	1.90	2.82	20 22 54.1
21.9	0 51 10.35	51 10.64	3 49 39.3	49 41.0	7.7471	8.536	1.92	2.83	21 22 50.3
22.9	0 51 18.38	51 18.67	3 50 28.5	50 30.2	7.7452	8.533	1.94	2.84	22 22 46.5
23.9	0 51 26.37	51 26.66	3 51 17.5	51 19.2	7.7431	8.531	1.96	2.85	23 22 42.7
24.9	0 51 34.33	51 34.62	3 52 6.2	52 7.9	7.7409	8.528	1.97	2.86	24 22 38.9
25.9	0 51 42.24	51 42.53	3 52 54.6	52 56.3	7.7387	8.525	1.99	2.87	25 22 35.1
26.9	0 51 50.11	51 50.40	3 53 42.6	53 44.3	7.7365	8.522	2.00	2.88	26 22 31.3
27.9	0 51 57.95	51 58.24	3 54 30.3	54 32.0	7.7341	8.519	2.02	2.89	27 22 27.5
28.9	0 52 5.74	52 6.03	3 55 17.7	55 19.4	7.7317	8.516	2.03	2.90	28 22 23.7
29.9	0 52 13.48	52 13.77	3 56 4.7	56 6.4	7.7292	8.513	2.05	2.91	29 22 19.9
30.9	0 52 21.18	52 21.46	+ 3 56 51.4	56 53.1	+7.7267	+8.510	−2.06	−2.92	30 22 16.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
May 1.9	0 52 28.84	52 29.12	+ 3 57 37.8	57 39.5	+7.7239	+8.506	−2.08	−2.93	1 22 12.3
2.9	0 52 36.44	52 36.72	3 58 23.8	58 25.5	7.7210	8.502	2.09	2.94	2 22 8.5
3.9	0 52 43.98	52 44.26	3 59 9.4	59 11.1	7.7180	8.498	2.10	2.95	3 22 4.7
4.9	0 52 51.47	52 51.75	3 59 54.5	59 56.2	7.7149	8.494	2.11	2.96	4 22 0.9
5.9	0 52 58.91	52 59.19	4 0 39.2	0 40.9	7.7117	8.490	2.13	2.97	5 21 57.1
6.9	0 53 6.29	53 6.57	4 1 23.5	1 25.2	7.7083	8.486	2.14	2.98	6 21 53.3
7.9	0 53 13.61	53 13.88	4 2 7.4	2 9.1	7.7048	8.482	2.15	2.99	7 21 49.5
8.9	0 53 20.87	53 21.14	4 2 50.8	2 52.5	7.7011	8.477	2.16	3.00	8 21 45.6
9.9	0 53 28.06	53 28.33	4 3 33.8	3 35.5	7.6973	8.473	2.18	3.01	9 21 41.8
10.9	0 53 35.19	53 35.46	4 4 16.4	4 18.1	7.6933	8.469	2.19	3.02	10 21 38.0
11.9	0 53 42.26	53 42.52	4 4 58.5	5 0.1	7.6893	8.464	2.20	3.03	11 21 34.2
12.9	0 53 49.26	53 49.52	4 5 40.1	5 41.7	7.6851	8.459	2.21	3.04	12 21 30.4
13.9	0 53 56.20	53 56.46	4 6 21.3	6 22.9	7.6806	8.454	2.23	3.05	13 21 26.6
14.9	0 54 3.07	54 3.33	4 7 2.0	7 3.6	7.6760	8.449	2.24	3.06	14 21 22.8
15.8	0 54 9.86	54 10.11	4 7 42.2	7 43.8	7.6713	8.444	2.25	3.07	15 21 19.0
16.8	0 54 16.58	54 16.83	4 8 21.9	8 23.4	7.6665	8.438	2.26	3.08	16 21 15.1
17.8	0 54 23.22	54 23.47	4 9 1.1	9 2.7	7.6617	8.432	2.27	3.09	17 21 11.3
18.8	0 54 29.79	54 30.04	4 9 39.8	9 41.4	7.6568	8.426	2.28	3.10	18 21 7.5
19.8	0 54 36.28	54 36.52	4 10 18.0	10 19.5	7.6517	8.420	2.29	3.11	19 21 3.7
20.8	0 54 42.70	54 42.94	4 10 55.6	10 57.0	7.6464	8.414	2.30	3.11	20 20 59.9
21.8	0 54 49.04	54 49.28	4 11 32.7	11 34.1	7.6412	8.408	2.31	3.12	21 20 56.1
22.8	0 54 55.30	54 55.54	4 12 9.3	12 10.7	7.6349	8.402	2.32	3.13	22 20 52.3
23.8	0 55 1.47	55 1.70	4 12 45.3	12 46.7	7.6291	8.395	2.33	3.14	23 20 48.4
24.8	0 55 7.56	55 7.79	4 13 20.7	13 22.0	7.6234	8.388	2.33	3.14	24 20 44.5
25.8	0 55 13.57	55 13.80	4 13 55.6	13 56.9	7.6180	8.381	2.34	3.15	25 20 40.7
26.8	0 55 19.50	55 19.73	4 14 29.9	14 31.2	7.6114	8.374	2.34	3.16	26 20 36.9
27.8	0 55 25.34	55 25.56	4 15 3.6	15 4.9	7.6050	8.366	2.35	3.17	27 20 33.0
28.8	0 55 31.09	55 31.31	4 15 36.6	15 37.9	7.5971	8.358	2.35	3.17	28 20 29.2
29.8	0 55 36.74	55 36.96	4 16 9.1	16 10.4	7.5902	8.350	2.36	3.18	29 20 25.3
30.8	0 55 42.30	55 42.52	4 16 41.0	16 42.2	7.5832	8.341	2.36	3.18	30 20 21.5
31.8	0 55 47.77	55 47.98	4 17 12.2	17 13.4	7.5760	8.332	2.37	3.19	31 20 17.7
June 1.8	0 55 53.15	55 53.36	4 17 42.8	17 44.0	7.5691	8.323	2.37	3.19	1 20 13.8
2.8	0 55 58.44	55 58.65	4 18 12.8	18 14.0	7.5609	8.314	2.37	3.20	2 20 10.0
3.8	0 56 3.63	56 3.83	4 18 42.2	18 43.4	7.5526	8.304	2.37	3.20	3 20 6.1
4.8	0 56 8.72	56 8.92	4 19 10.9	19 12.1	7.5449	8.294	2.38	3.21	4 20 2.3
5.8	0 56 13.72	56 13.92	4 19 38.9	19 40.0	7.5362	8.284	2.38	3.21	5 19 58.4
6.8	0 56 18.62	56 18.81	4 20 6.3	20 7.4	7.5273	8.274	2.39	3.21	6 19 54.6
7.8	0 56 23.42	56 23.61	4 20 33.0	20 34.1	7.5183	8.263	2.39	3.22	7 19 50.7
8.8	0 56 38.12	56 38.30	4 20 59.1	21 0.2	7.5091	8.253	2.40	3.22	8 19 46.9
9.8	0 56 32.71	56 32.89	4 21 24.5	21 25.5	7.5001	8.240	2.40	3.22	9 19 43.0
10.8	0 56 37.21	56 37.39	4 21 49.2	21 50.2	7.4896	8.228	2.41	3.22	10 19 39.2
11.8	0 56 41.60	56 41.77	4 22 13.2	22 14.2	7.4781	8.216	2.41	3.22	11 19 35.3
12.8	0 56 45.88	56 46.05	4 22 36.6	22 37.6	7.4679	8.204	2.42	3.23	12 19 31.5
13.8	0 56 50.06	56 50.23	4 22 59.3	23 0.2	7.4581	8.191	2.42	3.23	13 19 27.6
14.8	0 56 54.14	56 54.30	4 23 21.3	23 22.2	7.4463	8.177	2.42	3.23	14 19 23.8
15.8	0 56 58.11	56 58.27	4 23 42.6	23 43.5	7.4343	8.163	2.42	3.23	15 19 19.9
16.8	0 57 1.97	57 2.12	4 24 3.2	24 4.1	7.4220	8.148	2.43	3.24	16 19 16.0
17.8	0 57 5.71	57 5.86	4 24 23.1	24 23.9	7.4092	8.133	2.43	3.24	17 19 12.1
18.8	0 57 9.35	57 9.50	4 24 42.3	24 43.1	7.3961	8.117	2.43	3.24	18 19 8.3
19.8	0 57 12.88	57 13.02	4 25 0.8	25 1.6	7.3825	8.100	2.43	3.24	19 19 4.4
20.8	0 57 16.30	57 16.44	4 25 18.6	25 19.3	7.3685	8.082	2.44	3.25	20 19 0.5
21.7	0 57 19.61	57 19.75	4 25 35.6	25 36.3	7.3548	8.063	2.44	3.25	21 18 56.6
22.7	0 57 22.81	57 22.94	4 25 51.9	25 52.6	7.3378	8.043	2.44	3.25	22 18 52.7
23.7	0 57 25.89	57 26.02	4 26 7.5	26 8.1	7.3230	8.023	2.44	3.25	23 18 48.8
24.7	0 57 28.86	57 28.98	4 26 22.4	26 23.0	7.3047	8.002	2.45	3.26	24 18 44.9
25.7	0 57 31.71	57 31.83	4 26 36.5	26 37.0	7.2888	7.980	2.45	3.26	25 18 41.0
26.7	0 57 34.45	57 34.56	4 26 49.9	26 50.4	7.2697	7.956	2.45	3.26	26 18 37.2
27.7	0 57 37.07	57 37.18	4 27 2.6	27 3.1	7.2498	7.930	2.45	3.26	27 18 33.3
28.7	0 57 39.57	57 39.67	4 27 14.5	27 15.0	7.2281	7.902	2.45	3.26	28 18 29.4
29.7	0 57 41.95	57 42.05	4 27 25.6	27 26.0	7.2090	7.873	2.45	3.26	29 18 25.5
30.7	0 57 44.22	57 44.31	4 27 36.0	27 36.4	7.1860	7.841	2.45	3.26	30 18 21.6
31.7	0 57 46.37	57 46.46	+ 4 27 45.7	27 46.1	+7.1617	+7.807	−2.46	−3.26	31 18 17.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
July 1.7	0 57 46.37	57 46.46	+ 4 27 45.7	27 46.1	+7.1617	+7.807	−2.46	−3.26	1 18 17.7
2.7	0 57 48.40	57 48.48	4 27 54.6	27 55.0	7.1361	7.770	2.46	3.26	2 18 13.8
3.7	0 57 50.30	57 50.38	4 28 2.7	28 3.0	7.1088	7.731	2.46	3.26	3 18 9.9
4.7	0 57 52.09	57 52.16	4 28 10.1	28 10.4	7.0796	7.687	2.46	3.26	4 18 6.0
5.7	0 57 53.76	57 53.83	4 28 16.8	28 17.1	7.0484	7.637	2.46	3.26	5 18 2.1
6.7	0 57 55.31	57 55.37	4 28 22.7	28 23.0	7.0148	7.581	2.46	3.26	6 17 58.2
7.7	0 57 56.74	57 56.80	4 28 27.8	28 28.0	6.9783	7.518	2.46	3.26	7 17 54.3
8.7	0 57 58.05	57 58.10	4 28 32.2	28 32.4	6.9385	7.444	2.46	3.26	8 17 50.4
9.7	0 57 59.24	57 59.29	4 28 35.8	28 36.0	6.8947	7.354	2.46	3.26	9 17 46.5
10.7	0 58 0.31	58 0.35	4 28 38.7	28 38.9	6.8459	7.240	2.46	3.26	10 17 42.6
11.7	0 58 1.27	58 1.31	4 28 40.8	28 40.9	6.7910	7.085	2.46	3.26	11 17 38.6
12.7	0 58 2.10	58 2.13	4 28 42.2	28 42.3	6.7281	6.842	2.46	3.26	12 17 34.7
13.7	0 58 2.81	58 2.84	4 28 42.8	28 42.8	6.6545	+6.240	2.46	3.26	13 17 30.8
14.7	0 58 3.40	58 3.42	4 28 42.7	28 42.7	6.5650	−6.541	2.46	3.25	14 17 26.9
15.7	0 58 3.88	58 3.90	4 28 41.8	28 41.8	6.4544	6.939	2.46	3.25	15 17 23.0
16.7	0 58 4.23	58 4.24	4 28 40.2	28 40.1	6.3040	7.143	2.46	3.25	16 17 19.1
17.7	0 58 4.46	58 4.47	4 28 37.8	28 37.7	6.0720	7.281	2.46	3.25	17 17 15.1
18.7	0 58 4.57	58 4.57	4 28 34.7	28 34.6	+5.5406	7.386	2.46	3.25	18 17 11.2
19.7	0 58 4.56	58 4.56	4 28 30.8	28 30.6	−5.6867	7.470	2.46	3.25	19 17 7.2
20.7	0 58 4.43	58 4.42	4 28 26.2	28 26.0	6.1204	7.536	2.46	3.25	20 17 3.3
21.7	0 58 4.18	58 4.17	4 28 20.9	28 20.7	6.3330	7.598	2.46	3.25	21 16 59.3
22.7	0 58 3.81	58 3.79	4 28 14.8	28 14.6	6.4751	7.651	2.46	3.25	22 16 55.4
23.7	0 58 3.32	58 3.30	4 28 8.0	28 7.7	6.5820	7.699	2.46	3.25	23 16 51.4
24.7	0 58 2.71	58 2.68	4 28 0.4	28 0.1	6.6677	7.741	2.46	3.25	24 16 47.5
25.7	0 58 1.98	58 1.95	4 27 52.1	27 51.8	6.7392	7.779	2.46	3.25	25 16 43.5
26.7	0 58 1.13	58 1.09	4 27 43.1	27 42.8	6.8006	7.814	2.46	3.25	26 16 39.6
27.6	0 58 0.16	58 0.12	4 27 33.4	27 33.0	6.8565	7.846	2.46	3.25	27 16 35.6
28.6	0 57 59.07	57 59.02	4 27 22.9	27 22.5	6.8985	7.875	2.46	3.25	28 16 31.7
29.6	0 57 57.87	57 57.82	4 27 11.7	27 11.3	6.9420	7.903	2.46	3.25	29 16 27.7
30.6	0 57 56.55	57 56.49	4 26 59.8	26 59.4	6.9831	7.929	2.45	3.24	30 16 23.8
31.6	0 57 55.11	57 55.05	4 26 47.3	26 46.8	7.0148	7.954	2.45	3.24	31 16 19.8
Aug. 1.6	0 57 53.56	57 53.49	4 26 34.0	26 33.5	7.0457	7.977	2.45	3.24	1 16 15.9
2.6	0 57 51.89	57 51.82	4 26 20.0	26 19.5	7.0771	7.999	2.45	3.24	2 16 11.9
3.6	0 57 50.11	57 50.03	4 26 5.3	26 4.8	7.1076	8.020	2.45	3.24	3 16 8.0
4.6	0 57 48.21	57 48.13	4 25 50.0	25 49.4	7.1327	8.039	2.45	3.24	4 16 4.0
5.6	0 57 46.20	57 46.12	4 25 33.9	25 33.3	7.1566	8.057	2.45	3.24	5 16 0.0
6.6	0 57 44.08	57 44.00	4 25 17.2	25 16.6	7.1781	8.073	2.45	3.23	6 15 56.1
7.6	0 57 41.85	57 41.76	4 24 59.8	24 59.2	7.2004	8.089	2.44	3.23	7 15 52.1
8.6	0 57 39.50	57 39.41	4 24 41.8	24 41.1	7.2227	8.105	2.44	3.22	8 15 48.2
9.6	0 57 37.04	57 36.94	4 24 23.0	24 22.3	7.2430	8.120	2.44	3.22	9 15 44.2
10.6	0 57 34.47	57 34.37	4 24 3.6	24 2.9	7.2599	8.135	2.43	3.21	10 15 40.2
11.6	0 57 31.80	57 31.69	4 23 43.6	23 42.9	7.2762	8.150	2.43	3.21	11 15 36.3
12.6	0 57 29.03	57 28.92	4 23 22.9	23 22.1	7.2926	8.164	2.42	3.20	12 15 32.3
13.6	0 57 26.15	57 26.04	4 23 1.6	23 0.8	7.3085	8.177	2.42	3.20	13 15 28.3
14.6	0 57 23.17	57 23.05	4 22 39.7	22 38.9	7.3237	8.189	2.41	3.19	14 15 24.3
15.6	0 57 20.08	57 19.96	4 22 17.2	22 16.4	7.3385	8.201	2.41	3.19	15 15 20.4
16.6	0 57 16.89	57 16.77	4 21 54.0	21 53.1	7.3521	8.213	2.40	3.18	16 15 16.4
17.6	0 57 13.60	57 13.47	4 21 30.2	21 29.3	7.3653	8.224	2.40	3.18	17 15 12.4
18.6	0 57 10.21	57 10.08	4 21 5.8	21 4.9	7.3782	8.234	2.39	3.17	18 15 8.4
19.6	0 57 6.72	57 6.58	4 20 40.9	20 40.0	7.3906	8.244	2.38	3.16	19 15 4.4
20.6	0 57 3.13	57 2.99	4 20 15.5	20 14.5	7.4027	8.253	2.37	3.15	20 15 0.4
21.6	0 56 59.44	56 59.30	4 19 49.4	19 48.4	7.4139	8.262	2.37	3.15	21 14 56.4
22.6	0 56 55.66	56 55.51	4 19 22.8	19 21.8	7.4243	8.271	2.36	3.14	22 14 52.4
23.6	0 56 51.79	56 51.64	4 18 55.7	18 54.7	7.4349	8.280	2.35	3.13	23 14 48.4
24.6	0 56 47.82	56 47.67	4 18 28.0	18 27.0	7.4452	8.288	2.34	3.12	24 14 44.4
25.6	0 56 43.76	56 43.60	4 17 59.7	17 58.7	7.4559	8.296	2.34	3.11	25 14 40.4
26.6	0 56 39.61	56 39.45	4 17 31.0	17 30.0	7.4638	8.304	2.33	3.10	26 14 36.4
27.6	0 56 35.38	56 35.21	4 17 1.8	17 0.7	7.4725	8.311	2.32	3.09	27 14 32.4
28.6	0 56 31.06	56 30.89	4 16 32.1	16 31.0	7.4816	8.318	2.31	3.08	28 14 28.4
29.6	0 56 26.65	56 26.48	4 16 1.8	16 0.7	7.4900	8.325	2.30	3.07	29 14 24.4
30.6	0 56 22.16	56 21.99	4 15 31.1	15 30.0	7.4977	8.332	2.29	3.06	30 14 20.4
31.6	0 56 17.59	56 17.41	+ 4 15 0.0	14 58.9	−7.5053	−8.339	−2.28	−3.05	31 14 16.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Sept. 1.6	0 56 12.94	56 12.76	+ 4 14 28.4	14 27.2	−7.5128	−8.345	−2.27	−3.03	1 14 12.3
2.5	0 56 8.20	56 8.02	4 13 56.3	13 55.1	7.5201	8.350	2.26	3.02	2 14 8.3
3.5	0 56 3.39	56 3.21	4 13 23.8	13 22.6	7.5268	8.355	2.25	3.00	3 14 4.3
4.5	0 55 58.51	55 58.32	4 12 50.9	12 49.7	7.5331	8.360	2.24	2.99	4 14 0.3
5.5	0 55 53.57	55 53.38	4 12 17.7	12 16.4	7.5392	8.365	2.23	2.97	5 13 56.3
6.5	0 55 48.55	55 48.36	4 11 44.1	11 42.8	7.5453	8.370	2.22	2.96	6 13 52.3
7.5	0 55 43.46	55 43.27	4 11 10.1	11 8.8	7.5509	8.375	2.21	2.94	7 13 48.2
8.5	0 55 38.31	55 38.11	4 10 35.7	10 34.4	7.5563	8.380	2.20	2.93	8 13 44.2
9.5	0 55 33.09	55 32.89	4 10 1.0	9 59.7	7.5620	8.384	2.18	2.91	9 13 40.2
10.5	0 55 27.80	55 27.60	4 9 25.9	9 24.6	7.5670	8.389	2.17	2.90	10 13 36.2
11.5	0 55 22.45	55 22.25	4 8 50.4	8 49.1	7.5717	8.393	2.16	2.88	11 13 32.1
12.5	0 55 17.05	55 16.84	4 8 14.6	8 13.2	7.5762	8.397	2.15	2.87	12 13 28.1
13.5	0 55 11.59	55 11.38	4 7 38.6	7 37.2	7.5806	8.401	2.13	2.85	13 13 24.1
14.5	0 55 6.08	55 5.87	4 7 2.2	7 0.8	7.5848	8.404	2.12	2.83	14 13 20.1
15.5	0 55 0.52	55 0.31	4 6 25.6	6 24.2	7.5888	8.407	2.10	2.81	15 13 16.0
16.5	0 54 54.91	54 54.70	4 5 48.7	5 47.3	7.5926	8.410	2.09	2.79	16 13 12.0
17.5	0 54 49.25	54 49.03	4 5 11.6	5 10.2	7.5963	8.413	2.07	2.77	17 13 8.0
18.5	0 54 43.54	54 43.32	4 4 34.2	4 32.8	7.5999	8.416	2.05	2.74	18 13 4.0
19.5	0 54 37.78	54 37.56	4 3 56.6	3 55.2	7.6033	8.419	2.03	2.71	19 12 59.9
20.5	0 54 31.98	54 31.76	4 3 18.8	3 17.4	7.6065	8.421	2.01	2.67	20 12 55.9
21.5	0 54 26.14	54 25.92	4 2 40.8	2 39.4	7.6095	8.423	1.99	−2.63	21 12 51.9
22.5	0 54 20.25	54 20.03	4 2 2.6	2 1.2	7.6123	8.425	1.97		22 12 47.9
23.5	0 54 14.33	54 14.11	4 1 24.2	1 22.8	7.6149	8.427	1.94		23 12 43.8
24.5	0 54 8.38	54 8.15	4 0 45.7	0 44.3	7.6172	8.428	1.91		24 12 39.8
25.5	0 54 2.41	54 2.08	4 0 7.1	0 5.7	7.6194	8.429	1.88		25 12 35.8
26.5	0 53 56.40	53 56.17	3 59 28.3	59 26.8	7.6211	8.430	1.84		26 12 31.8
27.5	0 53 50.37	53 50.14	3 58 49.4	58 47.9	7.6227	8.431	1.78		27 12 27.7
28.5	0 53 44.32	53 44.09	3 58 10.5	58 9.0	7.6242	8.432	1.71		28 12 23.7
29.5	0 53 38.25	53 38.02	3 57 31.5	57 30.0	7.6255	8.433	−1.64		29 12 19.7
30.5	0 53 32.15	53 31.92	3 56 52.4	56 50.9	7.6267	8.434			30 12 15.7
Oct. 1.5	0 53 26.03	53 25.80	3 56 13.2	56 11.7	7.6278	8.434			1 12 11.6
2.5	0 53 19.90	53 19.67	3 55 34.0	55 32.5	7.6287	8.435			2 12 7.6
3.5	0 53 13.77	53 13.54	3 54 54.8	54 53.3	7.6295	8.435			3 12 3.6
4.5	0 53 7.63	53 7.40	3 54 15.7	54 14.2	7.6301	8.435			4 11 59.5
5.5	0 53 1.48	53 1.25	3 53 36.6	53 35.1	7.6306	8.434			5 11 55.5
6.5	0 52 55.32	52 55.09	3 52 57.5	52 56.0	7.6308	8.434			6 11 51.5
7.5	0 52 49.15	52 48.92	3 52 18.5	52 17.0	7.6309	8.433			7 11 47.4
8.5	0 52 42.99	52 42.76	3 51 39.5	51 38.0	7.6308	8.432			8 11 43.4
9.4	0 52 36.83	52 36.60	3 51 0.6	50 59.1	7.6305	8.431			9 11 39.3
10.4	0 52 30.68	52 30.45	3 50 21.8	50 20.3	7.6301	8.430			10 11 35.3
11.4	0 52 24.54	52 24.32	3 49 43.1	49 41.6	7.6295	8.428			11 11 31.3
12.4	0 52 18.40	52 18.18	3 49 4.6	49 3.1	7.6287	8.427			12 11 27.2
13.4	0 52 12.28	52 12.06	3 48 26.2	48 24.7	7.6278	8.426			13 11 23.2
14.4	0 52 6.17	52 5.95	3 47 47.9	47 46.4	7.6267	8.424			14 11 19.1
15.4	0 52 0.08	51 59.86	3 47 9.8	47 8.4	7.6255	8.422	+1.70	+2.70	15 11 15.1
16.4	0 51 54.00	51 53.78	3 46 31.8	46 30.4	7.6241	8.420	1.74	2.74	16 11 11.1
17.4	0 51 47.95	51 47.73	3 45 54.1	45 52.7	7.6225	8.418	1.78	2.77	17 11 7.0
18.4	0 51 41.92	51 41.71	3 45 16.6	45 15.2	7.6207	8.415	1.82	2.80	18 11 3.0
19.4	0 51 35.92	51 35.71	3 44 39.3	44 37.9	7.6187	8.412	1.86	2.83	19 10 59.0
20.4	0 51 29.94	51 29.73	3 44 2.2	44 0.8	7.6164	8.409	1.89	2.85	20 10 55.0
21.4	0 51 24.00	51 23.79	3 43 25.4	43 24.0	7.6140	8.406	1.92	2.87	21 10 50.9
22.4	0 51 18.10	51 17.89	3 42 48.9	42 47.5	7.6114	8.403	1.95	2.89	22 10 46.9
23.4	0 51 12.23	51 12.02	3 42 12.7	42 11.4	7.6086	8.399	1.98	2.90	23 10 42.9
24.4	0 51 6.39	51 6.18	3 41 36.8	41 35.5	7.6057	8.395	2.01	2.92	24 10 38.9
25.4	0 51 0.60	51 0.40	3 41 1.2	40 59.9	7.6025	8.391	2.03	2.94	25 10 34.8
26.4	0 50 54.86	50 54.66	3 40 25.9	40 24.6	7.5991	8.387	2.06	2.95	26 10 30.8
27.4	0 50 49.15	50 48.95	3 39 51.0	39 49.7	7.5956	8.383	2.08	2.96	27 10 26.8
28.4	0 50 43.49	50 43.29	3 39 16.4	39 15.1	7.5919	8.378	2.10	2.08	28 10 22.8
29.4	0 50 37.89	50 37.69	3 38 42.2	38 40.9	7.5879	8.373	2.12	2.99	29 10 18.7
30.4	0 50 32.35	50 32.16	3 38 8.4	38 7.1	7.5836	8.368	2.14	3.00	30 10 14.7
31.4	0 50 26.86	50 26.67	3 37 35.1	37 33.9	7.5792	8.363	2.16	3.01	31 10 10.7
32.4	0 50 21.42	50 21.23	+ 3 37 2.1	37 0.9	−7.5744	−8.357	+2.18	+3.02	32 10 6.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of *a*.		Log of *b*.		Mean Solar Time of Meridian Transit.
	At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ′ ″	′ ″					d h m
Nov. 1.4	0 50 21.42	50 21.23	+ 3 37 2.1	37 0.9	−7.5744	−8.357	+2.18	+3.02	1 10 6.7
2.4	0 50 16.04	50 15.86	3 36 29.5	36 28.3	7.5692	8.351	2.19	3.03	2 10 2.7
3.4	0 50 10.73	50 10.55	3 35 57.4	35 56.2	7.5638	8.345	2.20	3.04	3 9 58.6
4.4	0 50 5.49	50 5.31	3 35 25.8	35 24.7	7.5584	8.339	2.21	3.05	4 9 54.6
5.4	0 50 0.31	50 0.13	3 34 54.6	34 53.5	7.5530	8.332	2.22	3.06	5 9 50.6
6.4	0 49 55.20	49 55.03	3 34 23.9	34 22.8	7.5470	8.325	2.23	3.07	6 9 46.6
7.4	0 49 50.16	49 50.00	3 33 53.8	33 52.7	7.5410	8.317	2.24	3.08	7 9 42.5
8.4	0 49 45.18	49 45.01	3 33 24.2	33 23.2	7.5348	8.309	2.25	3.09	8 9 38.5
9.4	0 49 40.27	49 40.10	3 32 55.0	32 54.0	7.5282	8.302	2.26	3.10	9 9 34.5
10.4	0 49 35.44	49 35.28	3 32 26.4	32 25.4	7.5210	8.294	2.27	3.11	10 9 30.5
11.4	0 49 30.70	49 30.54	3 31 58.4	31 57.4	7.5137	8.286	2.28	3.12	11 9 26.5
12.4	0 49 26.04	49 25.88	3 31 30.9	31 30.0	7.5062	8.277	2.28	3.12	12 9 22.5
13.4	0 49 21.46	49 21.30	3 31 3.9	31 3.0	7.4987	8.268	2.29	3.13	13 9 18.5
14.4	0 49 16.96	49 16.81	3 30 37.5	30 36.6	7.4909	8.258	2.30	3.14	14 9 14.5
15.3	0 49 12.55	49 12.40	3 30 11.7	30 10.8	7.4826	8.248	2.31	3.15	15 9 10.5
16.3	0 49 8.22	49 8.07	3 29 46.6	29 45.8	7.4735	8.238	2.31	3.15	16 9 6.5
17.3	0 49 3.97	49 3.83	3 29 22.0	29 21.2	7.4643	8.227	2.32	3.16	17 9 2.5
18.3	0 48 59.82	48 59.68	3 28 58.0	28 57.2	7.4549	8.216	2.33	3.17	18 8 58.5
19.3	0 48 55.77	48 55.63	3 28 34.7	28 33.9	7.4452	8.204	2.34	3.18	19 8 54.5
20.3	0 48 51.81	48 51.68	3 28 12.0	28 11.2	7.4349	8.191	2.34	3.18	20 8 50.5
21.3	0 48 47.94	48 47.81	3 27 50.0	27 49.2	7.4237	8.178	2.35	3.19	21 8 46.5
22.3	0 48 44.17	48 44.04	3 27 28.7	27 28.0	7.4116	8.164	2.36	3.20	22 8 42.5
23.3	0 48 40.51	48 40.39	3 27 8.0	27 7.3	7.3991	8.150	2.37	3.21	23 8 38.5
24.3	0 48 36.95	48 36.83	3 26 48.0	26 47.3	7.3869	8.135	2.37	3.21	24 8 34.5
25.3	0 48 33.48	48 33.36	3 26 28.6	26 27.9	7.3744	8.120	2.38	3.22	25 8 30.5
26.3	0 48 30.12	48 30.01	3 26 10.0	26 9.3	7.3614	8.104	2.39	3.22	26 8 26.5
27.3	0 48 26.87	48 26.76	3 25 52.1	25 51.4	7.3474	8.087	2.40	3.23	27 8 22.6
28.3	0 48 23.72	48 23.61	3 25 34.9	25 34.2	7.3323	8.068	2.40	3.23	28 8 18.6
29.3	0 48 20.68	48 20.58	3 25 18.4	25 17.8	7.3165	8.049	2.41	3.24	29 8 14.6
30.3	0 48 17.75	48 17.65	3 25 2.6	25 2.0	7.3003	8.029	2.41	3.24	30 8 10.6
Dec. 1.3	0 48 14.93	48 14.84	3 24 47.6	24 47.0	7.2833	8.008	2.42	3.25	1 8 6.6
2.3	0 48 12.23	48 12.14	3 24 33.3	24 32.8	7.2656	7.985	2.42	3.25	2 8 2.6
3.3	0 48 9.63	48 9.54	3 24 19.8	24 19.3	7.2473	7.961	2.43	3.25	3 7 58.7
4.3	0 48 7.15	48 7.07	3 24 7.0	24 6.5	7.2272	7.935	2.43	3.25	4 7 54.7
5.3	0 48 4.79	48 4.71	3 23 55.0	23 54.5	7.2052	7.908	2.44	3.26	5 7 50.7
6.3	0 48 2.55	48 2.47	3 23 43.7	23 43.3	7.1820	7.879	2.44	3.26	6 7 46.7
7.3	0 48 0.42	48 0.35	3 23 33.2	23 32.8	7.1576	7.846	2.44	3.26	7 7 42.8
8.3	0 47 58.41	47 58.34	3 23 23.5	23 23.1	7.1316	7.812	2.44	3.26	8 7 38.8
9.3	0 47 56.52	47 56.46	3 23 14.5	23 14.1	7.1041	7.776	2.45	3.26	9 7 34.8
10.3	0 47 54.75	47 54.69	3 23 6.3	23 6.0	7.0746	7.734	2.45	3.26	10 7 30.8
11.3	0 47 53.09	47 53.04	3 22 58.9	22 58.6	7.0430	7.687	2.45	3.26	11 7 26.8
12.3	0 47 51.56	47 51.51	3 22 52.3	22 52.0	7.0089	7.634	2.45	3.26	12 7 22.9
13.3	0 47 50.15	47 50.11	3 22 46.5	22 46.3	6.9719	7.574	2.46	3.27	13 7 18.9
14.3	0 47 48.86	47 48.82	3 22 41.5	22 41.3	6.9315	7.504	2.46	3.27	14 7 15.0
15.3	0 47 47.70	47 47.67	3 22 37.3	22 37.1	6.8849	7.421	2.46	3.27	15 7 11.1
16.3	0 47 46.66	47 46.63	3 22 33.9	22 33.8	6.8306	7.319	2.46	3.27	16 7 7.1
17.3	0 47 45.75	47 45.73	3 22 31.3	22 31.2	6.7710	7.174	2.47	3.28	17 7 3.2
18.3	0 47 44.96	47 44.94	3 22 29.6	22 29.6	6.7049	6.956	2.47	3.28	18 6 59.3
19.3	0 47 44.29	47 44.27	3 22 28.7	22 28.7	6.6234	−6.541	2.47	3.28	19 6 55.3
20.3	0 47 43.75	47 43.74	3 22 28.6	22 28.6	6.5183	+6.219	2.47	3.28	20 6 51.4
21.2	0 47 43.34	47 43.33	3 22 29.3	22 29.3	6.3794	6.883	2.48	3.28	21 6 47.5
22.2	0 47 43.06	47 43.05	3 22 30.8	22 30.9	6.1740	7.120	2.48	3.28	22 6 43.5
23.2	0 47 42.91	47 42.91	3 22 33.1	22 33.2	−5.7958	7.273	2.48	3.28	23 6 39.6
24.2	0 47 42.88	47 42.88	3 22 36.2	22 36.4	+5.3857	7.392	2.48	3.28	24 6 35.7
25.2	0 47 42.98	47 42.99	3 22 40.2	22 40.4	6.0591	7.475	2.49	3.29	25 6 31.7
26.2	0 47 43.21	47 43.22	3 22 45.0	22 45.2	6.3114	7.558	2.49	3.29	26 6 27.8
27.2	0 47 43.56	47 43.57	3 22 50.5	22 50.7	6.4700	7.620	2.49	3.29	27 6 23.8
28.2	0 47 44.04	47 44.06	3 22 56.9	22 57.1	6.5859	7.674	2.49	3.29	28 6 19.9
29.2	0 47 44.66	47 44.68	3 23 4.1	23 4.3	6.6773	7.722	2.50	3.30	29 6 16.0
30.2	0 47 45.41	47 45.44	3 23 12.1	23 12.4	6.7528	7.766	2.50	3.30	30 6 12.0
31.2	0 47 46.28	47 46.31	3 23 20.9	23 21.2	6.8170	7.807	2.50	3.30	31 6 8.1
32.2	0 47 47.28	47 47.32	+ 3 23 30.5	23 30.9	+6.8731	+7.844	+2.50	+3.30	32 6 4.2

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
	″	″	″	″	″	″	s	s	s
Jan. 1	7.64	26.47	13.41	2.97	26.37	7.88	0.21	1.82	0.58
6	7.13	24.38	13.48	2.77	24.30	7.93	0.20	1.67	0.58
11	6.76	22.44	13.43	2.63	22.35	7.91	0.19	1.56	0.59
16	6.49	20.66	13.27	2.53	20.59	7.81	0.18	1.44	0.58
21	6.30	19.07	13.00	2.45	19.00	7.66	0.18	1.33	0.57
26	6.18	17.66	12.64	2.40	17.60	7.44	0.17	1.24	0.56
31	6.11	16.41	12.22	2.37	16.35	7.20	0.17	1.15	0.54
Feb. 5	6.10	15.31	11.75	2.37	15.26	6.93	0.17	1.08	0.52
10	6.16	14.34	11.26	2.39	14.29	6.65	0.17	1.01	0.50
15	6.30	13.48	10.77	2.45	13.42	6.35	0.17	0.94	0.48
20	6.57	12.70	10.29	2.56	12.65	6.05	0.17	0.90	0.45
25	7.01	12.02	9.82	2.73	11.97	5.78	0.18	0.84	0.43
Mar. 2	7.71	11.40	9.36	3.00	11.36	5.53	0.20	0.80	0.41
7	8.75	10.84	8.93	3.41	10.81	5.28	0.23	0.76	0.39
12	10.18	10.34	8.52	3.96	10.30	5.04	0.27	0.72	0.37
17	11.85	9.88	8.15	4.61	9.80	4.82	0.31	0.68	0.35
22	13.42	9.47	7.81	5.22	9.43	4.60	0.35	0.65	0.34
27	14.35	9.10	7.49	5.59	9.07	4.42	0.37	0.62	0.32
Apr. 1	14.40	8.75	7.09	5.60	8.72	4.24	0.37	0.59	0.31
6	13.71	8.44	6.91	5.33	8.41	4.08	0.36	0.57	0.30
11	12.63	8.14	6.65	4.93	8.11	3.93	0.33	0.55	0.29
16	11.58	7.88	6.42	4.51	7.85	3.78	0.30	0.53	0.27
21	10.57	7.63	6.20	4.11	7.60	3.65	0.27	0.51	0.26
26	9.67	7.40	6.00	3.76	7.38	3.54	0.25	0.49	0.25
May 1	8.88	7.19	5.81	3.46	7.16	3.43	0.23	0.48	0.25
6	8.20	6.99	5.64	3.20	6.97	3.33	0.21	0.47	0.24
11	7.63	6.81	5.47	2.97	6.78	3.23	0.20	0.45	0.23
16	7.16	6.64	5.32	2.79	6.62	3.14	0.19	0.45	0.22
21	6.80	6.48	5.18	2.65	6.46	3.05	0.18	0.44	0.22
26	6.57	6.34	5.06	2.56	6.32	2.98	0.18	0.43	0.21
31	6.49	6.20	4.93	2.53	6.19	2.91	0.18	0.42	0.20
June 5	6.59	6.09	4.82	2.56	6.06	2.84	0.19	0.42	0.19
10	6.86	5.97	4.72	2.67	5.95	2.77	0.20	0.41	0.19
15	7.28	5.87	4.62	2.83	5.84	2.72	0.21	0.41	0.18
20	7.82	5.77	4.53	3.04	5.74	2.67	0.22	0.40	0.18
25	8.48	5.67	4.45	3.30	5.65	2.62	0.24	0.40	0.18
30	9.24	5.59	4.37	3.60	5.57	2.57	0.26	0.40	0.18
July 5	10.12	5.51	4.30	3.94	5.50	2.53	0.28	0.40	0.17
10	11.11	5.44	4.23	4.32	5.42	2.49	0.30	0.39	0.17
15	12.17	5.38	4.17	4.74	5.35	2.45	0.33	0.39	0.17
20	13.23	5.32	4.11	5.15	5.30	2.41	0.35	0.38	0.16
25	14.11	5.26	4.05	5.49	5.24	2.38	0.37	0.38	0.16
30	14.49	5.21	4.00	5.64	5.19	2.35	0.38	0.37	0.16
Aug. 4	14.11	5.17	3.95	5.49	5.15	2.33	0.38	0.37	0.16
9	12.98	5.13	3.90	5.05	5.11	2.30	0.35	0.36	0.15
14	11.44	5.10	3.86	4.45	5.07	2.28	0.31	0.36	0.15
19	9.87	5.07	3.82	3.84	5.05	2.26	0.27	0.35	0.15
24	8.55	5.05	3.79	3.33	5.03	2.23	0.23	0.35	0.15
29	7.56	5.02	3.76	2.94	5.00	2.21	0.20	0.34	0.15
Sept. 3	6.90	5.01	3.73	2.68	4.99	2.20	0.18	0.34	0.15
8	6.48	5.00	3.70	2.52	4.98	2.18	0.17	0.34	0.15
13	6.25	4.99	3.68	2.43	4.97	2.16	0.16	0.33	0.15
18	6.14	4.98	3.65	2.39	4.96	2.14	0.16	0.33	0.15
23	6.12	4.98	3.63	2.38	4.96	2.13	0.16	0.33	0.15
28	6.16	4.98	3.61	2.40	4.96	2.13	0.16	0.33	0.15
Oct. 3	6.26	4.99	3.59	2.44	4.97	2.12	0.16	0.33	0.15
8	6.43	5.00	3.58	2.50	4.98	2.11	0.17	0.33	0.15
13	6.66	5.01	3.56	2.59	5.00	2.10	0.18	0.34	0.15
18	6.97	5.03	3.55	2.71	5.01	2.10	0.19	0.34	0.15
23	7.40	5.05	3.55	2.88	5.03	2.09	0.20	0.35	0.15

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
	″	″	″	″	″	″	s	s	s
Oct. 28	7.97	5.07	3.54	3.10	5.05	2.08	0.22	0.35	0.15
Nov. 2	8.73	5.10	3.54	3.40	5.07	2.08	0.25	0.35	0.15
7	9.76	5.13	3.53	3.80	5.11	2.08	0.28	0.36	0.15
12	11.06	5.16	3.53	4.31	5.15	2.08	0.31	0.37	0.15
17	12.26	5.20	3.53	4.77	5.18	2.08	0.34	0.37	0.15
22	12.63	5.24	3.52	4.91	5.21	2.08	0.35	0.38	0.15
27	11.67	5.28	3.52	4.54	5.26	2.08	0.33	0.38	0.15
Dec. 2	10.20	5.33	3.53	3.97	5.31	2.08	0.27	0.39	0.15
7	8.92	5.38	3.53	3.47	5.36	2.08	0.24	0.39	0.15
12	7.98	5.43	3.53	3.11	5.41	2.08	0.22	0.40	0.15
17	7.32	5.49	3.53	2.86	5.47	2.08	0.20	0.40	0.15
22	6.85	5 56	3.54	2.67	5.53	2.08	0.19	0.40	0.15
27	6.52	5.63	3.55	2.54	5.60	2.09	0.18	0.40	0.15
32	6.29	5.70	3.55	2.45	5.67	2.10	0.18	0.40	0 15

Mean Noon.	♃	♄	⛢	♃	♄	⛢	♃	♄	⛢
	″	″	″	″	″	″	s	s	s
Jan. 1	1.44	0.82	0.47	16.19	7.45	1.86	1.19	0.51	0.12
11	1.43	0.83	0.47	16.03	7.55	1.86	1.17	0.52	0.12
21	1.42	0.84	0.47	15.94	7.66	1.85	1.16	0.53	0.12
31	1.42	0.85	0.47	15.90	7.78	1.85	1.15	0.54	0.12
Feb. 10	1.42	0.87	0.47	15.92	7.91	1.84	1.15	0.55	0.12
20	1.43	0.88	0.46	15.99	8.05	1.83	1.15	0.56	0.12
Mar. 2	1.44	0.90	0.46	16.11	8.18	1.81	1.15	0.57	0.12
12	1.45	0.91	0.46	16.29	8.31	1.80	1.16	0.58	0.12
22	1.47	0.92	0.45	16.53	8.43	1.78	1.18	0.59	0.12
Apr. 1	1.50	0.94	0.45	16.82	8.55	1.77	1.20	0.59	0.12
11	1.53	0.95	0.45	17.18	8.65	1.75	1.22	0.60	0.12
21	1.57	0.96	0.44	17.58	8.72	1.74	1.24	0.60	0.12
May 1	1.61	0.96	0.44	18.05	8.76	1.73	1.29	0.60	0.12
11	1.66	0.96	0.44	18.57	8.77	1.71	1.31	0.60	0.12
21	1.71	0.96	0.44	19.14	8.76	1.70	1.35	0.60	0.11
31	1.76	0.96	0.43	19.75	8.72	1.70	1.39	0.60	0.11
June 10	1.82	0.95	0.43	20.40	8.65	1.69	1.43	0.60	0.11
20	1.88	0.94	0.43	21.07	8.56	1.69	1.47	0.60	0.11
30	1.94	0.93	0.43	21.74	8.45	1.69	1.52	0.59	0.11
July 10	2.00	0.91	0.43	22.39	8.33	1.69	1.57	0.58	0.11
20	2.05	0.90	0.43	22.97	8.20	1.70	1.61	0.57	0.11
30	2.09	0.89	0.43	23.46	8.07	1.70	1.65	0.56	0.11
Aug. 9	2.12	0.87	0.44	23.82	7.93	1.71	1.68	0.55	0.11
19	2.14	0.86	0.44	24.02	7 80	1.72	1.70	0.54	0.12
29	2.15	0.84	0.44	24.05	7.67	1.73	1.70	0.53	0.12
Sept. 8	2.13	0.83	0.45	23.91	7.56	1.74	1.70	0.52	0.12
18	2.10	0.82	0.45	23.59	7.46	1.76	1.68	0.52	0.12
28	2.06	0.81	0.45	23.13	7.37	1.77	1.65	0.51	0.12
Oct. 8	2.01	0.80	0.46	22.57	7.29	1.79	1.61	0.51	0.12
18	1.96	0.79	0.46	21.94	7.22	1.81	1.56	0.50	0.12
28	1.90	0.79	0.47	21.26	7.17	1.82	1.51	0.50	0.12
Nov. 7	1.84	0.78	0.47	20.59	7.14	1.84	1.46	0.50	0.12
17	1.78	0.78	0.47	19.93	7.13	1.85	1.41	0.50	0.12
27	1.72	0.78	0.47	19.31	7.14	1.86	1.36	0.50	0.12
Dec. 7	1.67	0.79	0.48	18.73	7.17	1.86	1.32	0.50	0.13
17	1.62	0.79	0.48	18.20	7 22	1.87	1.28	0.51	0.13
27	1.58	0.80	0.48	17 73	7.28	1.87	1.25	0.51	0.13
37	1.55	0.81	0.48	17.33	7.35	1.87	1.22	0.52	0.13

NOTE. — For Neptune the Horizontal Parallax = 0″.28 (between Jan. 18 and June 19.)
" " " " = 0″.29 (before Jan. 18, between June 19 and Aug. 24, and after Nov. 16.)
" " " " = 0″.30 (between Aug. 24 and Nov. 16.)

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z	Z′.	λ = ⊙'s True Longitude.	λ′	δ = ⊙'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9.9
Jan. 1.0	+.1857499	7517	—.8857718	7535	—.3842935	3358	280 53 22.0	22.5	+0.36	926631
1.5	.1943350	3365	.8842234	2051	.3836216	6638	281 23 57.4	57.7	0.39	926646
2.0	.2029052	9063	.8826059	5876	.3829197	9618	281 54 32.9	33.1	0.42	926665
2.5	.2114599	4607	.8809193	9010	.3821878	2298	282 25 8.5	8.6	0.45	926689
3.0	.2199982	9986	.8791637	1455	.3814262	4681	282 55 44.0	44.0	0.47	926717
3.5	+.2285194	5194	—.8773393	3212	—.3806347	6765	283 26 19.6	19.5	+0.48	926749
4.0	.2370228	0224	.8754461	4282	.3798135	8552	283 56 55.2	55.0	0.48	926785
4.5	.2455078	5070	.8734845	4667	.3789626	:0042	284 27 30.8	30.5	0.47	926825
5.0	.2539736	9725	.8714545	4369	.3780820	1235	284 58 6.3	5.9	0.45	926870
5.5	.2624196	4181	.8693564	3389	.3771718	2132	285 28 41.8	41.4	0.43	926919
6.0	+.2708450	8431	—.8671903	1730	—.3762322	2735	285 59 17.2	16.7	+0.40	926971
6.5	.2792492	2469	.8649566	9304	.3752632	3044	286 29 52.6	52.1	0.36	927028
7.0	.2876314	6288	.8626553	6363	.3742648	3059	287 0 27.9	27.3	0.32	927089
7.5	.2959909	9880	.8602864	2696	.3732372	2782	287 31 3.2	2.5	0.28	927154
8.0	.3043271	3238	.8578504	8338	.3721805	2214	288 1 38.3	37.5	0.23	927223
8.5	+.3126393	6355	—.8553474	3310	—.3710948	1356	288 32 13.3	12.4	+0.18	927297
9.0	.3209269	9229	.8527776	7614	.3699802	:0209	289 2 48.1	47.0	0.12	927376
9.5	.3291892	1848	.8501413	1253	.3688368	8775	289 33 22.9	21.8	+0.06	927459
10.0	.3374254	4207	.8474387	3229	.3676646	7052	290 3 57.5	56.3	—0.01	927547
10.5	.3456350	6299	.8446700	6544	.3664638	5043	290 34 31.9	31.7	0.08	927640
11.0	+.3538172	8118	—.8418356	8203	—.3652345	2749	291 5 6.1	4.8	—0.14	927738
11.5	.3619714	9657	.8389359	9208	.3639769	:0172	291 35 40.4	39.1	0.20	927841
12.0	.3700971	0911	.8359711	9563	.3626909	7311	292 6 14.3	12.9	0.26	927949
12.5	.3781937	1874	.8329413	9267	.3613768	4170	292 36 48.0	46.5	0.32	928063
13.0	.3862604	2538	.8298469	8326	.3600347	0748	293 7 21.6	20.0	0.38	928182
13.5	+.3942968	2899	—.8266882	6741	—.3586646	7046	293 37 55.0	53.3	—0.43	928307
14.0	.4023022	2950	.8234654	4516	.3572666	3065	294 8 28.2	26.4	0.48	928438
14.5	.4102761	2686	.8201789	1654	.3558410	8809	294 38 61.2	59.3	0.52	928575
15.0	.4182177	2099	.8168290	8158	.3543878	4276	295 9 34.0	32.0	0.55	928718
15.5	.4261266	1185	.8134159	4030	.3529072	9470	295 40 6.6	4.6	0.58	928867
16.0	+.4340022	:9938	—.8099399	9273	—.3513993	4390	296 10 39.0	36.9	—0.60	929022
16.5	.4418440	8353	.8064013	3890	.3498642	9038	296 41 11.2	9.1	0.62	929184
17.0	.4496513	6423	.8028005	7885	.3483020	3415	297 11 43.3	41.1	0.63	929352
17.5	.4574236	4143	.7991377	1260	.3467129	7523	297 42 15.2	13.0	0.63	929527
18.0	.4651604	1509	.7954132	4019	.3450970	1363	298 12 46.9	44.6	0.62	929709
18.5	+.4728611	8513	—.7916273	6163	—.3434544	4936	298 43 18.3	15.9	—0.60	929898
19.0	.4805252	5152	.7877803	7607	.3417853	8244	299 13 49.5	47.0	0.58	930093
19.5	.4881521	1418	.7838725	8622	.3400898	1288	299 44 20.5	17.9	0.55	930295
20.0	.4957412	7307	.7799042	8943	.3383679	4068	300 14 51.4	48.7	0.51	930504
20.5	.5032921	2813	.7758757	8661	.3366199	6687	300 45 22.1	19.4	0.46	930720
21.0	+.5108041	7931	—.7717873	7781	—.3348459	8846	301 15 52.6	49.8	—0.41	930943
21.5	.5182769	2657	.7676393	6305	.3330461	0847	301 46 23.0	20.2	0.36	931173
22.0	.5257099	6985	.7634320	4236	.3312205	2589	302 16 53.2	50.3	0.30	931409
22.5	.5331024	0908	.7591657	1577	.3293692	4075	302 47 23.3	20.4	0.24	931652
23.0	.5404539	4421	.7548407	8331	.3274925	5306	303 17 53.2	50.2	0.17	931902
23.5	+.5477639	7519	—.7504573	4501	—.3255904	6284	303 48 23.0	19.9	—0.10	932158
24.0	.5550319	0197	.7460158	0090	.3236631	7009	304 18 52.6	49.4	—0.04	932420
24.5	.5622573	1449	.7415165	5101	.3217107	7484	304 49 22.0	18.7	+0.03	932688
25.0	.5694394	4268	.7369597	9537	.3197333	7708	305 19 51.2	47.8	0.10	932962
25.5	.5765778	5650	.7323457	3401	.3177312	7686	305 50 20.3	16.9	0.17	933241
26.0	+.5836719	6589	—.7276748	6696	—.3157044	7416	306 20 49.3	45.8	+0.23	933526
26.5	.5907212	7080	.7229473	9425	.3136531	6902	306 51 18.1	14.6	0.29	933817
27.0	.5977250	7116	.7181637	1592	.3115774	6144	307 21 46.7	43.1	0.35	934114
27.5	.6046828	6692	.7133242	3201	.3094775	5144	307 52 15.1	11.5	0.40	934416
28.0	.6115942	5805	.7084202	4255	.3073537	3905	308 22 43.4	39.7	0.45	934722
28.5	+.6184585	4446	—.7034791	4758	—.3052060	2427	308 53 11.5	7.7	+0.49	935033
29.0	.6252752	2612	.6984742	4713	.3030346	0712	309 23 39.4	35.5	0.52	935348
29.5	.6320438	0296	.6934150	4125	.3008396	8761	309 54 7.1	3.1	0.54	935668
30.0	.6387637	7494	.6883019	2998	.2986212	6576	310 24 34.6	30.5	0.56	935992
30.5	.6454343	4198	.6831352	1335	.2963796	4159	310 54 61.9	57.8	0.57	936320
31.0	+.6520551	0405	—.6779153	9140	—.2941149	1510	311 25 29.1	24.9	+0.58	936652

NOTE.—The accented letters correspond to the mean equinox and equator of January 0d.0.

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9 9
Jan. 31.5	+.6586256	6108	—.6726426	6417	—.2918273	8633	311 55 56.1	51.9	+0.58	936988
Feb. 1.0	.6651452	1303	.6673175	3170	.2895170	5528	312 26 22.8	18.5	0.57	937328
1.5	.6716134	5984	.6619405	9404	.2871842	2299	312 56 49.3	45.0	0.55	937671
2.0	.6780296	0145	.6565120	5123	.2848291	8646	313 27 15.5	11.1	0.53	938018
2.5	.6843933	3781	.6510325	0332	.2824520	4874	313 57 41.4	37.0	0.50	938368
3.0	+.6907039	6886	—.6455024	5035	—.2800529	0881	314 28 7.1	2.6	+0.46	938721
3.5	.6969609	9455	.6399221	9236	.2776322	6673	314 58 32.5	27.9	0.41	939077
4.0	.7031637	1482	.6342922	2942	.2751899	2248	315 28 57.6	52.9	0.36	939436
4.5	.7093118	2962	.6286132	6156	.2727263	7611	315 59 22.3	17.6	0.31	939798
5.0	.7154048	3891	.6228855	8884	.2702417	2763	316 29 46.6	41.8	0.25	940163
5.5	+.7214422	4284	—.6171097	1130	—.2677362	7707	317 0 10.6	5.8	+0.19	940531
6.0	.7274236	4077	.6112862	2900	.2652100	2443	317 30 34.3	29.4	0.13	940902
6.5	.7333485	3325	.6054155	4197	.2626633	6074	318 0 57.7	52.8	+0.07	941277
7.0	.7392166	2906	.5994981	5028	.2600963	1302	318 31 20.7	15.7	0.00	941655
7.5	.7450275	0114	.5935344	5395	.2575092	5430	319 1 43.3	38.2	—0.07	942036
8.0	+.7507807	7646	—.5875250	5306	—.2549024	9360	319 32 5.5	0.3	—0.14	942421
8.5	.7564758	4597	.5814704	4764	.2522759	3094	320 2 27.3	22.1	0.20	942809
9.0	.7621124	0963	.5753712	3777	.2496301	6634	320 32 48.8	43.5	0.26	943201
9.5	.7676900	6739	.5692278	2347	.2469651	9982	321 3 9.9	4.6	0.31	943596
10.0	.7732081	1920	.5630408	0482	.2442812	3141	321 33 30.6	25.2	0.37	943995
10.5	+.7786664	6503	—.5568108	8186	—.2415785	6113	322 3 50.9	45.5	—0.41	944398
11.0	.7840645	0484	.5505382	5465	.2388574	8900	322 34 10.7	5.2	0.45	944805
11.5	.7894021	3860	.5442237	2324	.2361179	1504	323 4 30.1	24.6	0.48	945216
12.0	.7946787	6627	.5378677	8768	.2333605	3928	323 34 49.1	43.5	0.51	945631
12.5	.7998941	8781	.5314707	4802	.2305853	6174	324 5 7.6	2.0	0.52	946050
13.0	+.8050480	0321	—.5250333	0433	—.2277925	8244	324 35 25.7	20.0	—0.53	946474
13.5	.8101401	1242	.5185561	5665	.2249823	:0141	325 5 43.4	37.7	0.53	946903
14.0	.8151699	1541	.5120394	2503	.2221550	1866	325 35 60.6	54.8	0.52	947336
14.5	.8201372	1215	.5054838	4951	.2193108	3423	326 6 17.4	11.6	0.51	947774
15.0	.8250416	0260	.4988899	9017	.2164499	4812	326 36 33.7	27.8	0.49	948216
15.5	+.8298829	8674	—.4922581	2703	—.2135725	6037	327 6 49.6	43.7	—0.46	948665
16.0	.8346605	6451	.4855889	6016	.2106790	7100	327 36 65.0	59.0	0.43	949117
16.5	.8393743	3590	.4788829	8960	.2077694	8003	328 7 20.0	14.0	0.39	949575
17.0	.8440242	0090	.4721405	1541	.2048440	8747	328 37 34.7	28.6	0.35	950039
17.5	.8486098	5947	.4653623	3763	.2019029	9334	329 7 49.0	42.9	0.30	950508
18.0	+.8531307	1157	—.4585488	5633	—.1989465	9768	329 37 62.8	56.6	—0.25	950982
18.5	.8575868	5719	.4517004	7153	.1959749	:0050	330 8 16.2	10.0	0.19	951461
19.0	.8619778	9631	.4448176	8330	.1929883	:0182	330 38 29.2	22.9	0.13	951945
19.5	.8663032	2886	.4379009	9167	.1899870	:0167	331 8 41.8	35.5	—0.06	952434
20.0	.8705627	5482	.4309508	9671	.1869713	:0008	331 38 54.0	47.6	+0.01	952928
20.5	+.8747561	7417	—.4339678	9845	—.1839414	9708	332 8 65.9	59.5	+0.08	953427
21.0	.8788829	8687	.4169525	9697	.1808975	9267	332 39 17.3	10.8	0.15	953931
21.5	.8829429	9288	.4099053	9229	.1778397	8687	333 9 28.4	21.9	0.22	954440
22.0	.8869361	9222	.4028267	8448	.1747683	7971	333 39 39.1	32.5	0.29	954953
22.5	.8908620	8487	.3957173	7358	.1716835	7122	334 9 49.5	42.9	0.35	955470
23.0	+.8947202	7066	—.3885776	5966	—.1685855	6140	334 39 59.5	52.8	+0.41	955991
23.5	.8985104	4969	.3814081	4275	.1654745	5028	335 10 9.1	2.4	0.47	956516
24.0	.9022324	2191	.3742093	2292	.1623509	3790	335 40 18.3	11.5	0.52	957045
24.5	.9058861	8729	.3669818	:0021	.1592149	2428	336 10 27.2	20.4	0.56	957578
25.0	.9094711	4581	.3597260	7468	.1560666	0943	336 40 35.7	28.9	0.59	958115
25.5	+.9129869	9741	—.3524423	4635	—.1529063	9338	337 10 43.9	37.1	+0.61	958655
26.0	.9164334	4208	.3451313	1530	.1497342	7615	337 40 51.7	44.8	0.63	959198
26.5	.9198105	7981	.3377936	8157	.1465506	5777	338 10 59.1	52.2	0.64	959744
27.0	.9231176	1054	.3304298	4524	.1433559	3828	338 40 66.1	59.1	0.65	960292
27.5	.9263545	3425	.3230404	0634	.1401501	1768	339 11 12.8	5.8	0.65	960843
28.0	+.9295210	5092	—.3156260	6494	—.1369335	9599	339 41 19.1	12.0	+0.64	961396
28.5	.9326169	6053	.3081873	2111	.1337064	7326	340 11 25.0	17.9	0.62	961952
Mar. 1.0	.9356419	6305	.3007248	7490	.1304690	4950	340 41 30.5	23.3	0.60	962509
1.5	.9385957	5845	.2932392	2638	.1272216	2474	341 11 35.6	28.4	0.57	963068
2.0	.9414781	4671	.2857310	7560	.1239644	9899	341 41 40.3	33.0	0.53	963629
2.5	+.9442889	2781	—.2782008	2262	—.1206977	7230	342 11 44.6	37.3	+0.49	964191

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9.9
Mar. 3.0	+.9470276	0171	—.2706494	6753	—.1174217	4468	342 41 48.4	41.0	+0.44	964755
3.5	.9496942	6839	.2630774	1037	.1141367	1616	343 11 51.8	44.4	0.39	965320
4.0	.9522886	2786	.2554852	5119	.1108430	8677	343 41 54.8	47.3	0.33	965886
4.5	.9548105	8007	.2478734	9005	.1075409	5654	344 11 57.3	49.8	0.27	966453
5.0	.9572598	2503	.2402427	2702	.1042306	2549	344 41 59.4	51.8	0.21	967021
5.5	+.9596363	6270	—.2325937	6216	—.1009123	9364	345 11 61.0	53.4	+0.14	967590
6.0	.9619398	9308	.2249271	9554	.0975863	6102	345 41 62.2	54.5	+0.07	968159
6.5	.9641702	1614	.2172435	2722	.0942529	2766	346 11 62.9	55.2	0.00	968729
7.0	.9663274	3189	.2095434	5725	.0909126	9360	346 41 63.1	55.3	—0.06	969300
7.5	.9684112	4029	.2018275	8570	.0875654	5886	347 11 62.7	54.9	0.12	969871
8.0	+.9704214	4134	—.1940965	1264	—.0842116	2345	347 41 61.8	53.9	—0.19	970444
8.5	.9723579	3502	.1863509	3812	.0808514	8741	348 11 60.4	52.5	0.25	971017
9.0	.9742204	2130	.1785914	6221	.0774852	5076	348 41 58.4	50.4	0.30	971592
9.5	.9760091	0020	.1708186	8497	.0741131	1353	349 11 55.9	47.9	0.34	972167
10.0	.9777238	7170	.1630332	0646	.0707356	7575	349 41 52.9	44.8	0.38	972744
10.5	+.9793645	3580	—.1552358	2676	—.0673528	3745	350 11 49.4	41.3	—0.42	973321
11.0	.9809311	9249	.1474270	4592	.0639650	9864	350 41 45.3	37.2	0.45	973899
11.5	.9824237	4178	.1396075	6401	.0605725	5937	351 11 40.6	32.5	0.47	974478
12.0	.9838421	8365	.1317778	8107	.0571756	1965	351 41 35.4	27.2	0.49	975059
12.5	.9851865	1812	.1239386	9719	.0537745	7952	352 11 29.6	21.4	0.50	975641
13.0	+.9864567	4517	—.1160905	1242	—.0503696	3900	352 41 23.2	14.9	—0.50	976225
13.5	.9876528	6481	.1082341	2682	.0469610	9812	353 11 16.2	7.9	0.49	976811
14.0	.9887746	7702	.1003700	4044	.0435490	5689	353 41 8.7	0.3	0.47	977399
14.5	.9898222	8181	.0924987	5335	.0401338	1535	354 10 60.7	52.3	0.45	977989
15.0	.9907956	7919	.0846209	6560	.0367158	7352	354 40 52.0	43.5	0.42	978581
15.5	+.9916948	6914	—.0767370	7725	—.0332951	3143	355 10 42.8	34.3	—0.38	979175
16.0	.9925197	5166	.0688477	8835	.0298720	8909	355 40 33.0	24.5	0.33	979772
16.5	.9932704	2676	.0609535	9897	.0264467	4654	356 10 22.7	14.2	0.28	980371
17.0	.9939460	9445	.0530550	0915	.0230196	0380	356 40 11.8	3.2	0.23	980972
17.5	.9945492	5471	.0451528	1897	.0195909	6091	357 9 60.4	51.8	0.18	981576
18.0	+.9950773	0756	—.0372475	2847	—.0161608	1787	357 39 48.4	39.7	—0.12	982182
18.5	.9955313	5209	.0293395	3771	.0127295	7472	358 9 35.9	27.2	—0.06	982790
19.0	.9959111	9101	.0214294	4673	.0092973	3147	358 39 22.9	14.1	+0.01	983401
19.5	.9962168	2161	.0135178	5560	.0058644	8816	359 9 9.3	0.5	0.09	984015
20.0	.9964484	4481	—.0056052	6437	—.0024311	4480	359 38 55.3	46.4	0.16	984631
20.5	+.9966059	6059	+.0023079	2691	+.0010025	9858	0 8 40.7	31.8	+0.23	985249
21.0	.9966894	6398	.0102207	1816	.0044359	4195	0 38 25.7	16.8	0.29	985870
21.5	.9966988	6995	.0181330	0936	.0078691	8529	1 8 10.1	1.2	0.35	986493
22.0	.9966342	6353	.0260440	0043	.0113017	2858	1 57 54.1	45.1	0.41	987119
22.5	.9964956	4971	.0339533	9132	.0147335	7178	2 7 37.6	28.6	0.47	987747
23.0	+.9962830	2849	+.0418604	8200	+.0181643	1490	2 37 20.7	11.6	+0.52	988378
23.5	.9959964	9986	.0497646	7239	.0215939	5788	3 6 63.3	54.2	0.56	989011
24.0	.9956359	6385	.0576653	6643	.0250218	0070	3 36 45.4	36.2	0.60	989645
24.5	.9952014	2044	.0655620	5207	.0284480	4335	4 6 27.0	17.8	0.63	990280
25.0	.9946930	6964	.0734542	4126	.0318722	8580	4 35 68.2	58.9	0.66	990917
25.5	+.9941107	1145	+.0813413	2994	+.0352942	2802	5 5 48.9	39.6	+0.68	991555
26.0	.9934546	4588	.0892227	1805	.0387137	7000	5 35 29.2	19.9	0.69	992194
26.5	.9927246	7292	.0970977	0552	.0421305	1170	6 4 69.1	59.8	0.69	992834
27.0	.9919208	9258	.1049659	9231	.0455442	5310	6 34 48.5	39.1	0.69	993474
27.5	.9910432	0486	.1128266	7835	.0489547	9417	7 4 27.5	18.1	0.67	994115
28.0	+.9900921	0979	+.1206792	6358	+.0523615	3488	7 33 66.0	56.5	+0.65	994755
28.5	.9890672	0734	.1285233	4796	.0557646	7522	8 3 44.0	34.5	0.62	995396
29.0	.9879639	9756	.1363582	3142	.0591636	1515	8 33 21.6	12.0	0.59	996036
29.5	.9867971	8042	.1441834	1391	.0625584	5465	9 2 58.8	49.2	0.55	996676
30.0	.9855518	5593	.1519983	9538	.0659487	9371	9 32 35.5	25.8	0.50	997316
30.5	+.9842332	2411	+.1598022	7574	+.0693342	3229	10 2 11.8	2.1	+0.45	997956
31.0	.9828413	8497	.1675946	5496	.0727146	7036	10 31 47.6	37.9	0.40	998594
31.5	.9813763	3851	.1753748	3295	.0760898	0791	11 1 23.0	13.3	0.34	999231
Apr. 1.0	.9798384	8477	.1831422	0967	.0794594	4490	11 30 57.9	48.1	0.28	999866
1.5	.9782276	2373	.1908961	8508	.0828233	8131	12 0 32.4	22.6	0.22	▣00500
2.0	+.9765441	5543	+.1986360	5900	+.0861809	1710	12 29 66.3	56.4	+0.15	001133

▣ The first figures of this and the following logarithms are 0.0.

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
Apr. 2.5	+.9747879	7985	+.2063613	3150	+.0895322	5226	12 59 39.8	29.9	+0.08	001764
3.0	.9729594	9705	.2140713	0248	.0928769	8676	13 29 12.8	2.8	+0.01	002393
3.5	.9710586	0701	.2217654	7186	.0962148	2057	13 58 45.3	35.3	—0.05	003021
4.0	.9690855	0975	.2294430	3960	.0995455	5367	14 28 17.3	7.2	0.11	003646
4.5	.9670406	0530	.2371037	0565	.1028688	8603	14 57 48.7	38.6	0.17	004270
5.0	+.9649240	9369	+.2447468	6994	+.1061844	1762	15 27 19.6	9.5	—0.22	004891
5.5	.9627359	7492	.2523716	3240	.1094922	4843	15 56 50.0	39.9	0.26	005510
6.0	.9604766	4904	.2599775	9297	.1127918	7842	16 26 19.9	9.7	0.31	006127
6.5	.9581462	1604	.2675640	5160	.1160830	0757	16 55 49.2	39.0	0.35	006742
7.0	.9557449	7595	.2751305	0823	.1193656	3586	17 25 17.9	7.6	0.38	007355
7.5	+.9532730	2881	+.2826764	6280	+.1226394	6327	17 54 46.1	35.8	—0.40	007966
8.0	.9507309	7465	.2902012	1526	.1259040	8976	18 24 13.7	3.3	0.42	008577
8.5	.9481187	1348	.2977043	6555	.1291593	1532	18 53 40.8	30.4	0.43	009186
9.0	.9454367	4533	.3051851	1361	.1324049	3991	19 22 67.3	56.8	0.44	009793
9.5	.9426852	7023	.3126431	5939	.1356407	6352	19 52 33.3	22.8	0.43	010398
10.0	+.9398645	8821	+.3200778	0284	+.1388664	8612	20 21 58.7	48.2	—0.42	011001
10.5	.9369749	9930	.3274887	4391	.1420818	0769	20 51 23.5	13.0	0.39	011604
11.0	.9340166	0352	.3348751	8253	.1452865	2820	21 20 47.8	37.2	0.36	012205
11.5	.9309899	:0090	.3422366	1866	.1484805	4763	21 50 11.5	0.9	0.33	012805
12.0	.9278951	9147	.3495727	5225	.1516635	6596	22 19 34.6	23.9	0.29	013404
12.5	+.9247325	7526	+.3568828	8324	+.1548353	8317	22 48 57.2	46.5	—0.24	014002
13.0	.9215024	5230	.3641664	1158	.1579956	9924	23 18 19.2	8.4	0.19	014600
13.5	.9182051	2262	.3714231	3723	.1611443	1414	23 47 40.6	29.8	0.13	015197
14.0	.9148409	8626	.3786524	6014	.1642810	2784	24 16 61.4	50.5	—0.07	015793
14.5	.9114102	4324	.3858538	8026	.1674056	4033	24 46 21.7	10.8	0.00	016389
15.0	+.9079131	9358	+.3930267	:9753	+.1705179	5159	25 15 41.5	30.5	+0.06	016984
15.5	.9043501	3733	.4001706	1190	.1736177	6160	25 44 60.8	49.8	0.12	017579
16.0	.9007213	7451	.4072851	2334	.1767047	7034	26 14 19.5	8.4	0.19	018173
16.5	.8970272	0515	.4143699	3180	.1797789	7779	26 43 37.6	26.5	0.26	018767
17.0	.8932680	2928	.4214245	3725	.1828400	8394	27 12 55.1	43.9	0.33	019361
17.5	+.8894439	4692	+.4284484	3962	+.1858877	8874	27 42 12.2	1.0	+0.39	019955
18.0	.8855552	5811	.4354412	3889	.1889218	9219	28 11 28.8	17.5	0.45	020549
18.5	.8816023	6287	.4424024	3500	.1919422	9426	28 40 45.0	33.7	0.50	021143
19.0	.8775855	6125	.4493316	2791	.1949488	9496	29 9 60.7	49.3	0.55	021736
19.5	.8735051	5326	.4562284	1758	.1979413	9424	29 39 15.9	4.5	0.60	022329
20.0	+.8693613	3894	+.4630923	0396	+.2009194	9208	30 8 30.7	19.2	+0.64	022922
20.5	.8651545	1831	.4699227	8699	.2038830	8847	30 37 45.0	33.5	0.68	023515
21.0	.8608851	9142	.4767192	6663	.2068319	8340	31 6 58.9	47.3	0.71	024107
21.5	.8565531	5829	.4834813	4283	.2097659	7683	31 36 12.3	0.7	0.73	024698
22.0	.8521590	1894	.4902086	1555	.2126847	6875	32 5 25.3	13.6	0.74	025289
22.5	+.8477031	7340	+.4969007	8475	+.2155881	5912	32 34 37.9	26.2	+0.74	025879
23.0	.8431857	2172	.5035571	5038	.2184759	4794	33 3 50.1	38.3	0.74	026468
23.5	.8386071	6392	.5101772	1238	.2213481	3519	33 32 61.9	50.1	0.73	027056
24.0	.8339675	:0002	.5167607	7072	.2242043	2084	34 2 13.3	1.4	0.72	027642
24.5	.8292674	3007	.5233072	2536	.2270444	0488	34 31 24.2	12.3	0.69	028227
25.0	+.8245070	5408	+.5298161	7624	+.2298681	8728	35 0 34.7	22.7	+0.66	028810
25.5	.8196866	7210	.5362869	2331	.2326753	6803	35 29 44.9	32.9	0.63	029391
26.0	.8148065	8415	.5427192	6653	.2354657	4710	35 58 54.7	42.6	0.59	029970
26.5	.8098671	9026	.5491124	0584	.2382391	2447	36 27 64.2	52.1	0.54	030546
27.0	.8048688	9049	.5554669	4120	.2409954	:0014	36 57 13.3	1.1	0.48	031120
27.5	+.7998119	8486	+.5617796	7255	+.2437343	7406	37 26 21.9	9.7	+0.42	031691
28.0	.7946968	7341	.5680527	:9986	.2464556	4622	37 55 30.1	17.8	0.36	032260
28.5	.7895238	5616	.5742848	2306	.2491591	1660	38 24 38.0	25.7	0.30	032825
29.0	.7842933	3317	.5804755	4213	.2518446	8519	38 53 45.5	33.1	0.23	033387
29.5	.7790056	0445	.5866244	5701	.2545120	5196	39 22 52.6	40.2	0.16	033945
30.0	+.7736613	7008	+.5927310	6767	+.2571609	1688	39 51 59.3	46.8	+0.10	034499
30.5	.7682608	3008	.5987948	7405	.2597913	7995	40 20 65.6	53.1	+0.04	035049
May 1.0	.7628045	8451	.6048153	7610	.2624029	4114	40 49 71.6	59.0	—0.02	035596
1.5	.7572926	3338	.6107921	7378	.2649956	:0044	41 19 17.2	4.6	0.08	036139
2.0	.7517257	7675	.6167246	6703	.2675691	5783	41 48 22.4	9.7	0.14	036677
2.5	+.7461042	1465	+.6226124	5581	+.2701233	1329	42 17 27.1	14.4	—0.19	037211

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
May 3.0	+.7404286	4715	+.6284552	4009	+.2726579	6679	42 46 31.4	18.6	—0.24	037741
3.5	.7346993	5427	.6342524	1981	.2751728	1831	43 15 35.3	22.5	0.28	038267
4.0	.7289168	9608	.6400035	:9492	.2776678	6785	43 44 38.8	25.9	0.32	038788
4.5	.7230815	1260	.6457082	6539	.2801426	1536	44 13 41.8	28.8	0.35	039305
5.0	.7171939	2390	.6513661	3118	.2825972	6086	44 42 44.4	31.3	0.37	039817
5.5	+.7112545	3002	+.6569767	9224	+.2850313	0431	45 11 46.5	33.4	—0.38	040325
6.0	.7052638	3101	.6625396	4853	.2874447	4569	45 40 48.2	35.0	0.39	040828
6.5	.6992223	2691	.6680545	0002	.2898374	8499	46 9 49.4	36.2	0.38	041327
7.0	.6931304	1778	.6735210	4668	.2922091	2220	46 38 50.2	36.9	0.37	041822
7.5	.6869887	:0367	.6789387	8845	.2945597	5729	47 7 50.6	37.3	0.35	042313
8.0	+.6807977	8463	+.6843073	2532	+.2968890	9026	47 36 50.5	37.1	—0.33	042799
8.5	.6745580	6072	.6896264	5724	.2991969	2108	48 5 50.0	36.5	0.30	043282
9.0	.6682699	3197	.6948956	8417	.3014831	4974	48 34 49.0	35.4	0.26	043761
9.5	.6619342	9846	.7001146	0608	.3037476	7622	49 3 47.5	33.8	0.22	044236
10.0	.6555512	6022	.7052831	2294	.3059902	:0052	49 32 45.6	31.8	0.17	044707
10.5	+.6491215	1731	+.7104007	3471	+.3082108	2261	50 1 43.2	29.4	—0.11	045175
11.0	.6426455	6977	.7154671	4137	.3104092	4249	50 30 40.4	26.5	—0.05	045639
11.5	.6361238	1766	.7204820	4287	.3125853	6013	50 59 37.1	23.2	+0.01	046100
12.0	.6295567	6101	.7254451	3920	.3147389	7553	51 28 33.4	19.4	0.07	046558
12.5	.6229449	9989	.7303561	3031	.3168699	8867	51 57 29.2	15.2	0.14	047013
13.0	+.6162887	3433	+.7352147	1619	+.3189782	9954	52 26 24.6	10.5	+0.21	047465
13.5	.6095889	6441	.7400206	:9679	.3210636	0811	52 55 19.6	5.5	0.28	047914
14.0	.6028457	9016	.7447735	7210	.3231260	1439	53 23 74.1	59.9	0.34	048360
14.5	.5960598	1163	.7494731	4207	.3251652	1835	53 52 68.3	54.0	0.41	048804
15.0	.5892318	2889	.7541192	0670	.3271812	1999	54 21 62.0	47.6	0.47	049245
15.5	+.5823620	4197	+.7587115	6594	+.3291738	1928	54 50 55.3	40.9	+0.53	049684
16.0	.5754511	5095	.7632496	1977	.3311429	1623	55 19 48.2	33.7	0.59	050120
16.5	.5684993	5583	.7677334	6816	.3330884	1082	55 48 40.7	26.2	0.63	050554
17.0	.5615072	5669	.7721625	1109	.3350101	0303	56 17 32.9	18.3	0.67	050986
17.5	.5544755	5358	.7765368	4853	.3369080	9285	56 46 24.7	10.1	0.71	051415
18.0	+.5474045	4655	+.7808559	8046	+.3387821	8030	57 15 16.1	1.4	+0.74	051842
18.5	.5402944	3560	.7851197	0685	.3406322	6535	57 43 67.3	52.5	0.76	052267
19.0	.5331461	2084	.7893278	2768	.3424581	4795	58 12 58.1	43.2	0.78	052689
19.5	.5259598	:0228	.7934800	4291	.3442596	2817	58 41 48.5	33.5	0.79	053110
20.0	.5187361	7998	.7975763	5256	.3460367	0592	59 10 38.6	23.5	0.79	053528
20.5	+.5114754	5398	+.8016161	5655	+.3477893	8122	59 39 28.4	13.3	+0.78	053943
21.0	.5041783	2433	.8055990	5486	.3495172	5404	60 8 18.0	2.8	0.76	054356
21.5	.4968452	9108	.8095249	4747	.3512202	2437	60 36 67.3	52.0	0.74	054766
22.0	.4894766	5428	.8133935	3436	.3528983	9221	61 5 56.4	41.1	0.71	055173
22.5	.4820730	1399	.8172045	1548	.3545514	5755	61 34 45.2	29.9	0.67	055577
23.0	+.4746350	7025	+.8209576	9082	+.3561795	2040	62 3 33.7	18.3	+0.63	055978
23.5	.4671630	2311	.8246526	6034	.3577823	8071	62 32 22.0	6.5	0.59	056376
24.0	.4596575	7262	.8282892	2403	.3593598	3850	63 0 70.0	54.4	0.54	056770
24.5	.4521190	1883	.8318673	8187	.3609118	9373	63 29 57.8	42.1	0.48	057160
25.0	.4445480	6179	.8353863	3380	.3624382	4641	63 58 45.4	29.6	0.42	057546
25.5	+.4369450	:0155	+.8388462	7982	+.3639389	9651	64 27 32.7	16.9	+0.36	057928
26.0	.4293106	3817	.8422465	1989	.3654138	4404	64 56 19.8	3.9	0.29	058306
26.5	.4216454	7171	.8455871	5398	.3668628	8897	65 24 66.7	50.8	0.23	058679
27.0	.4139498	:0221	.8488677	8208	.3682857	3130	65 53 53.4	37.4	0.16	059048
27.5	.4062244	2973	.8520881	0415	.3696825	7098	66 22 39.9	23.8	0.10	059412
28.0	+.3984698	5433	+.8552480	2018	+.3710531	0811	66 51 26.2	10.0	+0.03	059771
28.5	.3906865	7606	.8583472	3013	.3723974	4257	67 19 72.2	55.9	—0.03	060125
29.0	.3828750	9497	.8613852	3397	.3737152	7439	67 48 58.0	41.6	0.09	060474
29.5	.3750360	1113	.8643620	3168	.3750064	0354	68 17 43.6	27.1	0.14	060818
30.0	.3671700	2458	.8672772	2324	.3762709	3003	68 46 29.0	12.4	0.19	061156
30.5	+.3592776	3540	+.8701309	0865	+.3775087	5384	69 14 74.2	57.6	—0.23	061489
31.0	.3513594	4363	.8729227	8787	.3787196	7497	69 43 59.2	42.5	0.27	061816
31.5	.3434160	4935	.8756521	6085	.3799035	9340	70 12 43.9	27.2	0.30	062136
June 1.0	.3354481	5261	.8783191	2759	.3810604	0913	70 41 28.4	11.6	0.32	062450
1.5	.3274562	5348	.8809235	8807	.3821902	2214	71 9 72.7	55.9	0.34	062759
2.0	+.3194409	5200	+.8834651	4228	+.3832928	3244	71 38 56.7	39.8	—0.35	063061

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
June 2.5	+.3114029	4826	+.8859437	9018	+.3843681	4001	72 7 40.5	23.5	−0.35	063357
3.0	.3033428	4230	.8883591	3177	.3854160	4484	72 36 24.0	6.9	0.34	063647
3.5	.2952613	3421	.8907112	6702	.3864365	4692	73 4 67.3	50.1	0.32	063931
4.0	.2871589	2402	.8929999	9594	.3874296	4627	73 33 50.3	33.0	0.29	064209
4.5	.2790363	1182	.8952250	1849	.3883951	4285	74 2 33.1	15.8	0.26	064482
5.0	+.2708940	9764	+.8973865	3469	+.3893330	3668	74 30 75.6	58.2	−0.23	064748
5.5	.2627327	8157	.8994842	4451	.3902433	2774	74 59 57.8	40.4	0.19	065009
6.0	.2545530	6365	.9015179	4793	.3911258	1602	75 28 39.8	22.3	0.14	065264
6.5	.2463556	4407	.9034875	4594	.3919806	:0153	75 57 21.5	3.9	0.09	065513
7.0	.2381410	2256	.9053929	3554	.3928076	8427	76 25 63.0	45.3	−0.03	065757
7.5	+.2299099	9951	+.9072341	1971	+.3936068	6122	76 54 44.2	26.4	+0.03	065996
8.0	.2216629	7486	.9090111	:9747	.3943780	4137	77 23 25.1	7.2	0.09	066229
8.5	.2134006	4869	.9107237	6878	.3951213	1573	77 51 65.8	47.8	0.15	066458
9.0	.2051236	2104	.9123717	3364	.3958366	8730	78 20 46.2	28.1	0.22	066681
9.5	.1968325	9199	.9139551	9203	.3965239	5606	78 49 26.4	8.3	0.29	066899
10.0	+.1885279	6158	+.9154739	4397	+.3971832	2202	79 17 66.3	48.1	+0.36	067113
10.5	.1802104	2988	.9169280	8943	.3978144	8517	79 46 46.0	27.8	0.42	067322
11.0	.1718805	9694	.9183173	2842	.3984175	4552	80 15 25.4	7.1	0.48	067527
11.5	.1635389	6283	.9196419	6093	.3989925	:0306	80 43 64.6	46.2	0.54	067728
12.0	.1551861	2760	.9209017	8697	.3995394	5779	81 12 43.5	25.0	0.59	067924
12.5	+.1468227	9131	+.9220967	0653	+.4000581	0969	81 41 22.2	3.6	+0.64	068116
13.0	.1384493	5402	.9232268	1960	.4005486	5878	82 9 60.7	42.0	0.69	068304
13.5	.1300664	1578	.9242921	2619	.4010110	0506	82 38 39.0	20.2	0.73	068489
14.0	.1216746	7665	.9252924	2628	.4014451	4851	83 6 77.1	58.2	0.76	068670
14.5	.1132744	3668	.9262278	1988	.4018510	8913	83 35 55.0	36.1	0.78	068847
15.0	+.1048665	9594	+.9270982	0698	+.4022287	2694	84 4 32.8	13.8	+0.80	069020
15.5	.0964513	5447	.9279036	8758	.4025781	6191	84 32 70.4	51.3	0.80	069191
16.0	.0880294	1233	.9286439	6168	.4028993	9406	85 1 47.9	28.7	0.80	069358
16.5	.0796013	6957	.9293191	2926	.4031922	2355	85 30 25.2	5.9	0.80	069522
17.0	.0711677	2626	.9299290	9033	.4034568	4988	85 58 62.4	43.0	0.79	069682
17.5	+.0627291	8245	+.9304738	4486	+.4036931	7354	86 27 39.5	20.0	+0.77	069839
18.0	.0542859	3818	.9309534	9289	.4039011	9438	86 55 76.5	56.9	0.74	069992
18.5	.0458388	9352	.9313678	3440	.4040807	1237	87 24 53.4	33.7	0.71	070142
19.0	.0373983	4851	.9317169	6938	.4042320	2754	87 53 30.2	10.4	0.67	070287
19.5	.0289349	:0322	.9320007	:9783	.4043549	3986	88 21 66.9	47.1	0.62	070429
20.0	+.0204794	5771	+.9322191	1974	+.4044494	4934	88 50 43.6	23.7	+0.57	070567
20.5	.0120222	1204	.9323721	3501	.4045155	5598	89 19 20.2	0.3	0.52	070712
21.0	+.0035638	6624	.9324597	4395	.4045532	5978	89 47 56.8	36.8	0.46	070832
21.5	−.0048952	7961	.9324819	4624	.4045624	6073	90 16 33.3	13.2	0.39	070958
22.0	.0133542	2547	.9324385	4198	.4045432	5884	90 44 69.8	49.6	0.33	071080
22.5	−.0218126	7127	+.9323296	3118	+.4044956	5411	91 13 46.3	26.0	+0.27	071199
23.0	.0302699	1696	.9321552	1380	.4044196	4654	91 42 22.8	2.4	0.20	071310
23.5	.0387255	6248	.9319152	8988	.4043151	3612	92 10 59.3	38.8	0.13	071418
24.0	.0471788	0777	.9316096	5940	.4041821	2285	92 39 35.8	15.2	+0.06	071521
24.5	.0556292	5277	.9312383	2235	.4040207	0674	93 7 72.3	51.7	0.00	071619
25.0	−.0640760	:9742	+.9308013	7874	+.4038308	8777	93 36 48.8	28.1	−0.06	071712
25.5	.0725187	4165	.9302986	2856	.4036124	6596	94 5 25.3	4.6	0.12	071800
26.0	.0809566	8541	.9297302	7180	.4033656	4131	94 33 61.8	41.0	0.17	071882
26.5	.0893891	2862	.9290961	0847	.4030903	1381	95 2 38.3	17.4	0.22	071957
27.0	.0978156	7124	.9283965	3860	.4027866	8347	95 30 74.8	53.8	0.26	072026
27.5	−.1062354	1318	+.9276313	6216	+.4024544	5028	95 59 51.3	30.2	−0.29	072090
28.0	.1146480	5441	.9268005	7917	.4020939	1427	96 28 27.8	6.6	0.32	072147
28.5	.1230528	:9486	.9259043	8964	.4017049	7540	96 56 64.3	43.0	0.34	072198
29.0	.1314491	3446	.9249425	9355	.4012875	3369	97 25 40.9	19.5	0.35	072244
29.5	.1398362	7314	.9239153	9092	.4008417	8914	97 53 77.4	56.0	0.35	072283
30.0	−.1482136	1086	+.9228226	8174	+.4003676	4177	98 22 53.9	32.4	−0.35	072315
30.5	.1565807	4754	.9216645	6602	.3998652	9156	98 51 30.4	8.9	0.34	072340
July 1.0	.1649367	8312	.9204412	4379	.3993346	3853	99 19 67.0	45.4	0.32	072359
1.5	.1732811	1753	.9191527	1503	.3987757	8267	99 48 43.5	21.8	0.29	072371
2.0	.1816133	5073	.9177991	7977	.3981886	2399	100 16 80.1	58.3	0.26	072377
2.5	−.1899326	8264	+.9163806	3801	+.3975734	6250	100 45 56.6	34.7	−0.23	072376

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
July 3.0	−.1982384	1320	+.9148973	8978	+.3969301	9820	101 14 33.1	11.1	−0.19	072369
3.5	.2065300	4234	.9133492	3506	.3962588	3109	101 42 69.6	47.5	0.14	072354
4.0	.2148068	7001	.9117365	7389	.3955595	6119	102 11 46.1	23.9	0.09	072334
4.5	.2230680	:9611	.9100594	0628	.3948322	8849	102 40 22.5	0.3	−0.03	072307
5.0	.2313131	2061	.9083179	3223	.3940771	1301	103 8 58.9	36.6	+0.03	072273
5.5	−.2395416	4344	+.9065123	5176	+.3932941	3474	103 37 35.2	12.9	+0.09	072233
6.0	.2477529	6456	.9046427	6490	.3924834	5370	104 5 71.5	49.1	0.16	072188
6.5	.2559464	8390	.9027093	7165	.3916450	6989	104 34 47.8	25.3	0.22	072136
7.0	.2641216	0141	.9007123	7205	.3907789	8331	105 3 24.0	1.4	0.29	072079
7.5	.2722778	1702	.8986518	6609	.3898853	9397	105 31 60.2	37.5	0.36	072016
8.0	−.2804144	3067	+.8965281	5382	+.3889643	:0190	106 0 36.4	13.6	+0.42	071948
8.5	.2885308	4230	.8943414	3524	.3880159	0709	106 28 72.6	49.7	0.48	071874
9.0	.2966266	5188	.8920919	1039	.3870403	0956	106 57 48.8	25.8	0.53	071795
9.5	.3047011	5932	.8897797	7926	.3860374	0930	107 26 25.0	2.0	0.58	071711
10.0	.3127538	6459	.8874050	4189	.3850074	0633	107 54 61.2	38.1	0.63	071623
10.5	−.3207842	6763	+.8849680	9828	+.3839504	:0065	108 23 37.3	14.2	+0.67	071529
11.0	.3287917	6838	.8824690	4848	.3828664	9228	108 51 73.4	50.2	0.71	071431
11.5	.3367758	6679	.8799081	9248	.3817555	8121	109 20 49.6	26.3	0.75	071328
12.0	.3447360	6281	.8772855	3032	.3806177	6746	109 49 25.7	2.3	0.76	071221
12.5	.3526718	5639	.8746014	6201	.3794532	5103	110 17 61.9	38.4	0.77	071110
13.0	−.3605825	4746	+.8718561	8758	+.3782622	3196	110 46 38.1	14.5	+0.77	070995
13.5	.3684677	3598	.8690498	0705	.3770447	1024	111 14 74.4	50.7	0.76	070877
14.0	.3763269	2190	.8661826	2043	.3758008	8588	111 43 50.8	27.0	0.74	070755
14.5	.3841595	0516	.8632548	2775	.3745304	5887	112 12 27.2	3.4	0.72	070629
15.0	.3919651	8573	.8602666	2903	.3732339	2924	112 40 63.6	39.7	0.70	070499
15.5	−.3997431	6358	+.8572182	2429	+.3719111	9698	113 9 40.2	16.3	+0.67	070366
16.0	.4074931	3854	.8541098	1356	.3705623	6213	113 37 76.8	52.8	0.63	070229
16.5	.4152146	1069	.8509416	9684	.3691876	2468	114 6 53.5	29.5	0.59	070089
17.0	.4229070	7994	.8477137	7416	.3677870	8464	114 35 30.4	6.3	0.54	069946
17.5	.4305699	4624	.8444264	4553	.3663606	4202	115 3 67.4	43.2	0.48	069800
18.0	−.4382028	0954	+.8410799	1099	+.3649084	9682	115 32 44.6	20.3	+0.42	069650
18.5	.4458051	6978	.8376743	7053	.3634306	4906	116 0 81.9	57.5	0.36	069497
19.0	.4533764	2692	.8342100	2421	.3619273	9875	116 29 59.4	34.9	0.30	069340
19.5	.4609161	8090	.8306870	7201	.3603986	4590	116 58 37.1	12.6	0.24	069179
20.0	.4684235	3166	.8271056	1398	.3588445	9051	117 26 74.9	50.3	0.17	069015
20.5	−.4758982	7914	+.8234669	5012	+.3572651	3259	117 55 52.9	28.3	+0.10	068847
21.0	.4833396	2330	.8197684	8047	.3556605	7216	118 24 31.1	6.4	+0.03	068675
21.5	.4907473	6408	.8160128	0502	.3540308	0921	118 52 69.5	44.8	−0.04	068498
22.0	.4981208	0145	.8121996	2381	.3523761	4377	119 21 48.1	23.3	0.10	068317
22.5	.5054595	3534	.8083289	3685	.3506965	7583	119 50 26.9	2.0	0.16	068131
23.0	−.5127629	6570	+.8044011	4418	+.3489922	:0543	120 18 66.0	41.0	−0.21	067940
23.5	.5200306	:9249	.8004163	4580	.3472632	3255	120 47 45.4	20.3	0.26	067744
24.0	.5272620	1165	.7963748	4176	.3455095	5721	121 15 85.0	59.8	0.31	067544
24.5	.5344565	3512	.7922768	3206	.3437314	7942	121 44 64.8	39.6	0.35	067339
25.0	.5416136	5086	.7881224	1673	.3419289	9919	122 13 44.8	19.5	0.38	067129
25.5	−.5487327	6279	+.7839120	9579	+.3401021	1653	122 41 85.1	59.8	−0.41	066914
26.0	.5558132	7087	.7796460	6930	.3382512	3146	123 10 65.7	40.3	0.43	066693
26.5	.5628546	7503	.7753245	3726	.3363763	4399	123 39 46.5	21.1	0.44	066466
27.0	.5698564	7524	.7709479	9971	.3344774	5412	124 8 27.6	2.1	0.44	066234
27.5	.5768179	7142	.7665164	5666	.3325548	6188	124 36 68.9	43.3	0.43	065996
28.0	−.5837386	6352	+.7620304	0817	+.3306086	6728	125 5 50.4	24.7	−0.41	065752
28.5	.5906180	5149	.7574902	5426	.3286389	7033	125 34 32.2	6.4	0.39	065502
29.0	.5974555	3527	.7528961	9496	.3266459	7105	126 2 74.2	48.3	0.36	065247
29.5	.6042507	1482	.7482483	3028	.3246297	6945	126 31 56.4	30.5	0.32	064985
30.0	.6110030	:9009	.7435472	6028	.3225904	6553	127 0 38.9	12.9	0.28	064717
30.5	−.6177119	6101	+.7387931	8498	+.3205281	5931	127 28 81.6	55.6	−0.24	064443
31.0	.6243769	2755	.7339865	:0443	.3184431	5083	127 57 64.5	38.4	0.19	064162
31.5	.6309974	8964	.7291277	1865	.3163355	4008	128 26 47.6	21.5	0.14	063875
Aug. 1.0	.6375729	4723	.7242170	2769	.3142053	2708	128 55 31.0	4.8	0.08	063583
1.5	.6441030	0028	.7192548	3158	.3020528	1184	129 23 74.6	48.3	−0.02	063284
2.0	−.6505870	4873	+.7142414	3035	+.3098781	9439	129 52 58.3	31.9	+0.04	062980

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
Aug. 2.5	—.6570246	:9253	+.7091772	2403	+.3076814	7473	130 21 42.3	15.8	+0.10	062669
3.0	.6634153	3165	.7040627	1269	.3054629	5289	130 50 26.5	0.0	0.17	062353
3.5	.6697586	6602	.6988982	9635	.3032227	2888	131 18 70.9	44.3	0.23	062031
4.0	.6760540	:9561	.6936841	7505	.3009609	:0271	131 47 55.5	28.8	0.30	061704
4.5	.6823010	2036	.6884209	4873	.2986778	7440	132 16 40.3	13.6	0.36	061371
5.0	—.6884992	4023	+.6831089	1774	+.2963735	4400	132 44 85.3	58.5	+0.42	061033
5.5	.6946481	5517	.6777486	8181	.2940481	1147	133 13 70.5	43.7	0.48	060690
6.0	.7007474	6516	.6723404	4110	.2917020	7687	133 42 55.9	29.0	0.53	060342
6.5	.7067966	7013	.6668847	9563	.2893352	4020	134 11 41.5	14.6	0.57	059989
7.0	.7127953	7006	.6613819	4546	.2869480	:0150	134 40 27.3	0.3	0.61	059632
7.5	—.7187431	6490	+.6558325	9055	+.2845405	6076	135 8 73.3	46.2	+0.64	059270
8.0	.7246397	5462	.6502368	3115	.2821129	1801	135 37 59.4	32.2	0.66	058905
8.5	.7304846	3917	.6445952	6702	.2796654	7327	136 6 45.8	18.6	0.67	058535
9.0	.7362774	1851	.6389081	9848	.2771981	2655	136 35 32.4	5.1	0.67	058162
9.5	.7420177	:9260	.6331759	2536	.2747112	7787	137 3 79.2	51.9	0.67	057785
10.0	—.7477052	6142	+.6273991	4778	+.2722049	2725	137 32 66.3	38.9	+0.66	057404
10.5	.7533395	2491	.6215781	6578	.2696794	7471	138 1 53.7	26.3	0.64	057020
11.0	.7589203	8306	.6157133	7940	.2671349	2027	138 30 41.3	13.8	0.61	056633
11.5	.7644472	3582	.6098050	8867	.2645715	:6393	138 59 29.1	1.6	0.58	056243
12.0	.7699198	8315	.6038537	9364	.2619893	0572	139 27 77.2	49.6	0.55	055851
12.5	—.7753377	2501	+.5978598	9435	+.2593886	4565	139 56 65.5	37.8	+0.51	055456
13.0	.7807006	6137	.5918238	9085	.2567696	8376	140 25 54.1	26.3	0.46	055058
13.5	.7860081	:9219	.5857460	8317	.2541323	2003	140 54 43.0	15.2	0.41	054657
14.0	.7912599	1745	.5796267	7133	.2514771	5452	141 23 32.2	4.3	0.35	054254
14.5	.7964556	3909	.5734664	5540	.2488040	8721	141 51 81.7	53.8	0.29	053848
15.0	—.8015947	5108	+.5672655	3541	+.2461133	1815	142 20 71.6	43.6	+0.22	053440
15.5	.8066769	5938	.5610243	1139	.2434051	4733	142 49 61.8	33.8	0.15	053029
16.0	.8117019	6196	.5547433	8338	.2406797	7480	143 18 52.4	24.3	0.08	052616
16.5	.8166694	5879	.5484228	5143	.2379372	:0055	143 47 43.3	15.2	+0.01	052200
17.0	.8215791	4984	.5420633	1557	.2351778	2462	144 16 34.5	6.3	—0.06	051782
17.5	—.8264306	3507	+.5356652	7586	+.2324016	4700	144 44 86.1	57.9	—0.13	051361
18.0	.8312234	1444	.5292289	3232	.2296089	6774	145 13 78.0	49.8	0.19	050939
18.5	.8359573	8791	.5227547	8500	.2267997	8682	145 42 70.4	42.1	0.26	050513
19.0	.8406319	5546	.5162431	3393	.2239743	:0629	146 11 63.2	34.8	0.32	050085
19.5	.8452469	1705	.5096944	7915	.2211328	2014	146 40 56.4	28.0	0.37	049655
20.0	—.8498018	7263	+.5031091	2061	+.2182755	2442	147 9 50.0	21.5	—0.42	049221
20.5	.8542964	2217	.4964875	5854	.2154025	4712	147 38 44.1	15.6	0.46	048784
21.0	.8587301	6563	.4898301	9299	.2125140	5828	148 7 38.6	10.0	0.49	048344
21.5	.8631027	0298	.4831373	2380	.2096102	6790	148 36 33.5	4.9	0.52	047901
22.0	.8674136	3417	.4764097	5112	.2066913	7602	149 5 28.9	0.2	0.54	047454
22.5	—.8716627	5917	+.4696477	7501	+.2037575	8264	149 33 84.7	56.0	—0.55	047003
23.0	.8758494	7794	.4628516	9548	.2008090	8780	150 2 80.9	52.1	0.56	046549
23.5	.8799736	9045	.4560220	1261	.1978460	9150	150 31 77.6	48.8	0.56	046091
24.0	.8840347	:9666	.4491595	2644	.1948687	9377	151 0 74.7	45.8	0.55	045629
24.5	.8880326	:9654	.4422644	3702	.1918773	9463	151 29 72.3	43.4	0.53	045163
25.0	—.8919668	9006	+.4353373	4439	+.1888720	9409	151 50 70.3	41.3	—0.50	044693
25.5	.8958370	7818	.4283786	4860	.1858530	9219	152 27 68.8	39.8	0.47	044219
26.0	.8996427	5785	.4213887	4969	.1828206	8894	152 56 67.7	38.6	0.43	043741
26.5	.9033836	3203	.4143682	4772	.1797750	8438	153 25 67.0	37.9	0.39	043258
27.0	.9070595	:9972	.4073176	4274	.1767164	7851	153 54 66.7	37.5	0.34	042771
27.5	—.9106699	6086	+.4002374	3480	+.1736449	7136	154 23 66.9	37.7	—0.29	042280
28.0	.9142145	1542	.3931281	2395	.1705608	6294	154 52 67.5	38.2	0.23	041784
28.5	.9176931	6338	.3859903	:1025	.1674643	5328	155 21 68.5	39.2	0.17	041282
29.0	.9211053	0470	.3788245	9375	.1643557	4241	155 50 70.0	40.6	0.11	040776
29.5	.9244510	3937	.3716313	7451	.1612352	3036	156 19 71.9	42.5	—0.05	040265
30.0	—.9277298	6735	+.3644113	5258	+.1581031	1714	156 48 74.2	44.7	+0.02	039750
30.5	.9309413	8860	.3571649	2802	.1549595	:0278	157 17 76.9	47.4	0.09	039230
31.0	.9340853	0310	.3498927	:0087	.1518048	8730	157 46 80.0	50.4	0.15	038706
31.5	.9371618	1085	.3425953	7120	.1486391	7073	158 15 83.5	53.9	0.21	038177
Sept. 1.0	.9401702	1180	.3352733	3907	.1454627	5308	158 44 87.4	57.7	0.27	037645
1.5	—.9431105	0594	+.3279272	:0453	+.1422758	3438	159 14 31.6	1.9	+0.33	037109

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
Sept. 2.0	−.9459824	9324	+.3205576	6764	+.1390788	1467	159 43 36.2	6.4	+0.38	036569
2.5	.9487857	7368	.3131651	2846	.1358717	9396	160 12 41.2	11.4	0.42	036025
3.0	.9515202	4724	.3057502	8704	.1326549	7227	160 41 46.6	16.7	0.46	035479
3.5	.9541858	1390	.2983135	4344	.1294286	4963	161 10 52.4	22.5	0.48	034928
4.0	.9567822	7365	.2908555	9771	.1261930	2606	161 39 58.5	28.5	0.50	034372
4.5	−.9593093	2646	+.2833768	4991	+.1229484	:0159	162 8 65.0	35.0	+0.52	033814
5.0	.9617668	7232	.2758779	:0008	.1196950	7624	162 37 71.8	41.7	0.53	033253
5.5	.9641546	1121	.2683594	4830	.1164330	5003	163 6 79.0	48.9	0.53	032689
6.0	.9664726	4312	.2608219	9461	.1131628	2300	163 35 86.6	56.4	0.53	032123
6.5	.9687206	6803	.2532659	3908	.1098845	9516	164 5 34.6	4.4	0.52	031555
7.0	−.9708983	8592	+.2456920	8175	+.1065984	6654	164 34 42.9	12.7	+0.50	030984
7.5	.9730057	:9677	.2381007	2269	.1033047	3716	165 3 51.7	21.5	0.47	030411
8.0	.9750427	0059	.2304924	6192	.1000036	0703	165 32 60.8	30.5	0.43	029837
8.5	.9770091	:9734	.2228678	9952	.0966954	6620	166 1 70.3	40.0	0.39	029262
9.0	.9789049	8704	.2152273	3552	.0933803	4467	166 30 80.2	49.8	0.35	028685
9.5	−.9807299	6965	+.2075715	7000	+.0900585	1248	167 0 30.5	0.1	+0.30	028107
10.0	.9824840	4518	.1999010	:0300	.0867303	7964	167 29 41.3	10.8	0.24	027528
10.5	.9841671	1361	.1922162	3458	.0833959	4619	167 58 52.5	22.0	0.18	026948
11.0	.9857790	7492	.1845177	6478	.0800555	1213	168 27 64.1	33.5	0.12	026367
11.5	.9873197	2911	.1768060	9367	.0767093	7749	168 56 76.2	45.6	+0.06	025785
12.0	−.9887889	7615	+.1690816	2128	+.0733576	4230	169 25 88.7	58.1	−0.01	025202
12.5	.9901866	1614	.1613451	4768	.0700007	0659	169 55 41.7	11.0	0.08	024618
13.0	.9915127	4877	.1535970	7292	.0666388	7038	170 24 55.1	24.4	0.15	024035
13.5	.9927670	7432	.1458378	9705	.0632720	3368	170 53 68.9	38.2	0.22	023451
14.0	.9939495	9260	.1380681	2013	.0599007	9653	171 22 83.2	52.4	0.28	022867
14.5	−.9950600	0386	+.1302884	4221	+.0565250	5894	171 52 38.0	7.2	−0.34	022282
15.0	.9960984	0783	.1224992	6333	.0531453	2095	172 21 53.3	22.4	0.40	021697
15.5	.9970645	0456	.1147009	8355	.0497617	8257	172 50 69.1	38.1	0.45	021111
16.0	.9979583	9406	.1068941	:0291	.0463744	4382	173 19 85.4	54.4	0.50	020525
16.5	.9987797	7632	.0990794	2149	.0429837	:0473	173 49 42.2	11.2	0.54	019939
17.0	−.9995286	5134	+.0912574	3933	+.0395899	6533	174 16 59.5	28.5	−0.58	019353
17.5	1.0002048	1908	.0834285	5648	.0361931	2563	174 46 77.3	46.3	0.61	018765
18.0	1.0008082	7955	.0755932	7299	.0327936	8566	175 17 35.7	4.6	0.63	018177
18.5	1.0013387	3273	.0677521	8892	.0293916	4544	175 46 54.6	23.5	0.64	017589
19.0	1.0017963	7862	.0599058	:0433	.0259873	:0499	176 15 74.1	42.9	0.65	017000
19.5	-1.0021808	1719	+.0520549	1928	+.0225810	6434	176 45 34.2	3.0	−0.65	016410
20.0	1.0024922	4846	.0441997	3379	.0191730	2351	177 14 54.8	23.5	0.64	015819
20.5	1.0027302	7239	.0363408	4794	.0157634	8253	177 43 76.0	44.7	0.63	015226
21.0	1.0028947	8897	.0284787	6176	.0123525	4141	178 13 37.7	6.3	0.61	014632
21.5	1.0029858	9821	.0206141	7534	.0089405	:0019	178 42 60.0	28.6	0.58	014037
22.0	-1.0030033	0009	+.0127475	8871	+.0055277	5888	179 11 82.9	51.5	−0.54	013440
22.5	1.0029472	9461	+.0048795	:0194	+.0021143	1752	179 41 46.4	15.0	0.50	012841
23.0	1.0028173	8175	−.0029892	8490	−.0012994	2387	180 10 70.4	38.9	0.46	012241
23.5	1.0026137	6152	.0108581	7176	.0047131	6526	180 40 35.0	3.5	0.40	012638
24.0	1.0023362	3390	.0187264	5856	.0081265	0663	181 9 60.2	28.6	0.34	011034
24.5	-1.0019849	9890	−.0265936	4525	−.0115393	4793	181 38 85.9	54.3	−0.28	010428
25.0	1.0015596	5651	.0344591	3178	.0149514	8917	182 8 52.2	20.5	0.22	009820
25.5	1.0010605	0673	.0423222	1806	.0183626	3032	182 37 79.0	47.3	0.15	009209
26.0	1.0004873	4954	.0501824	0406	.0217726	7135	183 7 46.4	14.6	0.08	008597
26.5	.9998401	8495	.0580391	8970	.0251810	1222	183 36 74.3	42.5	−0.02	007982
27.0	−.9991189	1297	−.0658915	7492	−.0285875	5290	184 6 42.7	10.9	+0.04	007365
27.5	.9983238	3359	.0737390	5965	.0319920	9338	184 35 71.6	39.8	0.10	006745
28.0	.9974548	4683	.0815811	4384	.0353940	3361	185 5 41.0	9.1	0.16	006124
28.5	.9965119	5267	.0894171	2742	.0387935	7359	185 34 70.9	39.0	0.21	005500
29.0	.9954951	5113	.0972463	1032	.0421900	1327	186 4 41.3	9.3	0.26	004874
29.5	−.9944045	4220	−.1050682	:9249	−.0455833	5963	186 33 72.2	40.2	+0.31	004246
30.0	.9932402	2591	.1128821	7386	.0489733	9167	187 3 43.6	11.5	0.35	003617
30.5	.9920023	0225	.1206875	5438	.0523596	3033	187 32 75.5	43.4	0.39	002985
Oct. 1.0	.9906910	7126	.1284839	3401	.0557419	6860	188 2 47.8	15.6	0.42	002352
1.5	.9893062	3291	.1362706	1267	.0591200	0644	188 31 80.6	48.4	0.44	001718
2.0	−.9878480	8723	−.1440469	:9029	−.0624937	4385	189 1 53.9	21.7	+0.46	001082

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
										0.0
Oct. 2.5	—.9863166	3423	—.1518122	6681	—.0658627	8078	189° 30′ 87″.6	55″.4	+0″.47	000445
3.0	.9847120	7391	.1595659	4217	.0692267	1722	190 0 61.8	29.5	0.47	▣ 999807
3.5	.9830345	0630	.1673076	1633	.0725855	5314	190 30 36.5	4.2	0.45	999167
4.0	.9812840	3139	.1750364	:9921	.0759388	8851	190 60 71.6	39.2	0.44	998528
4.5	.9794608	4921	.1827519	6075	.0792864	2330	191 29 47.2	14.8	0.42	997888
5.0	—.9775651	5978	—.1904534	3090	—.0826280	5750	191 58 83.1	50.6	+0.39	997248
5.5	.9755970	6311	.1981403	:9959	.0859633	9106	192 28 59.5	27.0	0.35	996607
6.0	.9735567	5922	.2058122	6678	.0892920	2397	192 58 36.3	3.7	0.30	995967
6.5	.9714444	4813	.2134685	3241	.0926140	5621	193 27 73.6	41.0	0.25	995327
7.0	.9692601	2983	.2211086	:9641	.0959290	8775	193 57 51.3	18.7	0.20	994688
7.5	—.9670041	0437	—.2287319	5875	—.0992368	1857	194 26 89.5	56.9	+0.14	994050
8.0	.9646766	7176	.2363380	1936	.1025371	4864	194 56 68.1	35.4	0.08	993412
8.5	.9622777	3201	.2439264	7821	.1058298	7795	195 26 47.2	14.5	+0.02	992776
9.0	.9598077	8514	.2514964	3521	.1091144	0645	195 55 86.7	53.9	—0.05	992141
9.5	.9572666	3117	.2590475	:9033	.1123909	3414	196 25 66.7	33.9	0.12	991507
10.0	—.9546546	7010	—.2665791	4350	—.1156589	6098	196 55 47.2	14.3	—0.19	990876
10.5	.9519720	:0198	.2740907	:9467	.1189182	8695	197 24 88.1	55.2	0.26	990246
11.0	.9492190	2641	.2815818	4379	.1221686	1203	197 54 69.4	36.4	0.32	989618
11.5	.9463956	4461	.2890518	:9080	.1254099	3620	198 24 51.2	18.2	0.38	988992
12.0	.9435021	5540	.2965004	3567	.1286419	5945	198 54 33.5	0.5	0.44	988368
12.5	—.9405386	5919	—.3039270	7834	—.1318643	8173	199 23 76.4	43.4	—0.50	987746
13.0	.9375054	5600	.3113311	1876	.1350769	0304	199 53 59.8	26.7	0.55	987127
13.5	.9344025	4585	.3187121	5687	.1382794	2333	200 23 43.7	10.6	0.59	986510
14.0	.9312303	2876	.3260606	:9264	.1414717	4261	200 52 88.1	54.9	0.63	985895
14.5	.9279838	:0475	.3334032	2601	.1446536	6084	201 22 73.1	39.9	0.66	985283
15.0	—.9246782	7382	—.3407122	5693	—.1478247	7800	201 52 58.6	25.3	—0.68	984673
15.5	.9212987	3601	.3479961	8533	.1509848	9406	202 22 44.7	11.4	0.70	984065
16.0	.9178505	9133	.3552543	1117	.1541337	0900	202 51 91.3	57.9	0.71	983460
16.5	.9143338	3980	.3624861	3436	.1572713	2280	203 21 78.5	45.1	0.71	982857
17.0	.9107487	8142	.3696910	5488	.1603972	3544	203 51 66.2	32.7	0.70	982256
17.5	—.9070955	1624	—.3768685	7265	—.1635112	4689	204 21 54.5	21.0	—0.68	981657
18.0	.9033744	4426	.3840182	:8764	.1666131	5713	204 51 43.3	9.7	0.66	981060
18.5	.8995856	6552	.3911395	:9979	.1697026	6612	205 20 92.7	59.1	0.63	980464
19.0	.8957293	8002	.3982318	0905	.1727795	7386	205 50 82.6	48.9	0.60	979870
19.5	.8918057	8780	.4052946	1536	.1758436	8032	206 20 73.1	39.4	0.56	979278
20.0	—.8878151	8887	—.4123273	1866	—.1788945	8546	206 50 64.2	30.4	—0.51	978687
20.5	.8837576	8326	.4193295	1891	.1819322	8928	207 20 55.9	22.1	0.46	978097
21.0	.8796335	7098	.4263005	1602	.1849563	9174	207 50 48.1	14.2	0.41	977509
21.5	.8754430	5207	.4332397	0999	.1879666	9281	208 20 40.9	6.9	0.35	976922
22.0	.8711864	2654	.4401467	0073	.1909629	9249	208 50 34.3	0.3	0.29	976336
22.5	—.8668640	9444	—.4470208	:8817	—.1939449	9074	209 19 88.2	54.2	—0.23	975751
23.0	.8624760	5577	.4538612	7227	.1969125	8755	209 49 82.7	48.6	0.16	975167
23.5	.8580426	1257	.4606680	5296	.1998653	8288	210 19 77.7	43.6	0.09	974584
24.0	.8535042	5886	.4674400	3020	.2028030	7671	210 49 73.3	39.1	—0.02	974001
24.5	.8489211	:0068	.4741769	0392	.2057255	6901	211 19 69.4	35.2	+0.04	973419
25.0	—.8442737	3607	—.4808781	7408	—.2086325	5977	211 49 66.0	31.7	+0.10	972837
25.5	.8395623	6507	.4875430	4061	.2115238	4895	212 19 63.2	28.9	0.16	972256
26.0	.8347871	8768	.4941710	0345	.2143991	3654	212 49 60.9	26.5	0.21	971676
26.5	.8299485	:0395	.5007616	6254	.2172582	2250	213 19 59.0	24.6	0.26	971097
27.0	.8250470	1393	.5073143	1785	.2201009	0683	213 49 57.7	23.2	0.30	970518
27.5	—.8200829	1765	—.5138286	6932	—.2229269	8948	214 19 56.9	22.4	+0.34	969940
28.0	.8150564	1513	.5203038	1688	.2257360	7045	214 49 56.5	21.9	0.37	969363
28.5	.8099681	:0643	.5267394	6048	.2285279	4970	215 19 56.6	22.0	0.39	968785
29.0	.8048182	9157	.5331348	0007	.2313025	2722	215 49 57.2	22.5	0.41	968208
29.5	.7996072	7061	.5394896	3560	.2340595	0298	216 19 58.2	23.5	0.42	967632
30.0	—.7943356	4358	—.5458033	6702	—.2367987	7696	216 49 59.7	24.9	+0.42	967057
30.5	.7890037	1052	.5520754	9428	.2395199	4913	217 19 61.6	26.8	0.42	966483
31.0	.7836119	7147	.5583053	1732	.2422228	1948	217 49 63.9	29.0	0.41	965911
31.5	.7781604	2645	.5644926	3610	.2449073	8799	218 19 66.6	31.7	0.39	965340
Nov. 1.0	.7726505	7559	.5706367	5056	.2475731	5463	218 49 69.8	34.8	0.36	964770
1.5	—.7670818	1885	—.5767371	6065	—.2502199	1937	219 19 73.4	38.4	+0.33	964202

▣ The first figures of this and the following logarithms are 9.9.

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9.9
Nov. 2.0	—.7614550	5630	—.5827934	6634	—.2528476	8220	219 49 77.3	42.2	+0.29	963636
2.5	.7557706	8799	.5888051	6757	.2554560	4310	220 19 81.6	46.5	0.24	963072
3.0	.7500290	1396	.5947716	6428	.2580450	0205	220 49 86.3	51.1	0.19	962510
3.5	.7442306	3425	.6006927	5646	.2606143	5904	221 19 91.4	56.2	0.13	961951
4.0	.7383759	4891	.6065679	4404	.2631636	1403	221 50 36.9	1.6	0.07	961395
4.5	—.7324654	5799	—.6123968	2698	—.2656929	6702	222 20 42.8	7.5	+0.01	960841
5.0	.7264907	6155	.6181788	0525	.2682018	1797	222 50 49.0	13.6	—0.06	960290
5.5	.7204790	5961	.6239137	7880	.2706902	6687	223 20 55.6	20.1	0.13	959743
6.0	.7144039	5222	.6296010	4759	.2731580	1371	223 50 62.6	27.0	0.19	959199
6.5	.7082748	3944	.6352404	1159	.2756050	5847	224 20 70.0	34.4	0.26	958659
7.0	—.7020922	2131	—.6408313	7074	—.2780309	0112	224 50 77.7	42.0	—0.33	958123
7.5	.6958566	9788	.6463733	2500	.2804356	4164	225 20 85.8	50.1	0.39	957591
8.0	.6895635	6919	.6518661	7435	.2828190	8005	225 50 94.3	58.5	0.45	957063
8 5	.6832282	3529	.6573093	1874	.2851808	1629	226 21 43.2	7.4	0.51	956539
9.0	.6768363	9622	.6627025	5813	.2875209	5036	226 51 52.5	16.6	0.56	956020
9.5	—.6703931	5203	—.6680452	:9247	—.2898391	8224	227 21 62.1	26.2	—0.61	955505
10.0	.6638991	:0275	.6733371	2174	.2921353	1193	227 51 72.1	36.1	0.65	954995
10.5	.6573547	4844	.6785779	4590	.2944093	3939	228 21 82.6	46.5	0.68	954489
11.0	.6507604	8913	.6837671	6490	.2966608	6461	228 51 93.4	57.2	0.71	953988
11.5	.6441167	2488	.6889043	7870	.2988897	8756	229 22 44.7	8.5	0.73	953492
12.0	—.6374240	5573	—.6939892	8727	—.3010959	0825	229 52 56.4	20.1	—0.75	953001
12.5	.6306827	8173	.6990214	:9057	.3032791	2663	230 22 68.6	32.3	0.75	952515
13.0	.6238934	:0292	.7040005	:8857	.3054393	4272	230 52 81.1	44.7	0.75	952034
13.5	.6170564	1934	.7089263	8123	.3075763	5649	231 22 94.1	57.7	0.74	951558
14.0	.6101724	3106	.7137983	6852	.3096899	6792	231 53 47.5	11.0	0.73	951087
14.5	—.6032417	3811	—.7186161	5038	—.3117800	7699	232 23 61.4	24.8	—0.70	950620
15.0	.5962648	4054	.7233793	2679	.3138463	8369	232 53 75.7	39.0	0.67	950160
15.5	.5892422	3840	.7280875	:9769	.3158887	8800	233 23 90.5	53.7	0.64	949703
16.0	.5821744	3173	.7327403	6306	.3179071	8991	233 54 45.7	8.8	0.60	949251
16.5	.5750619	2060	.7373373	2284	.3199012	8939	234 24 61.4	24.5	0.55	948803
17.0	—.5679051	:0503	—.7418781	7701	—.3218709	8642	234 54 77.5	40.5	—0.50	948360
17.5	.5607045	8509	.7463624	2553	.3238160	8100	235 24 94.1	57.1	0.44	947921
18.0	.5534605	6080	.7507897	6835	.3257364	7310	235 55 51.1	14.0	0.38	947485
18.5	.5461737	3224	.7551597	0544	.3276319	6271	236 25 68.6	31.5	0.31	947055
19.0	.5388446	9944	.7594719	3676	.3295023	4982	236 55 86.5	49.3	0.24	946628
19.5	—.5314737	6246	—.7637259	6226	—.3313475	3441	237 26 44.8	7.5	—0.17	946205
20.0	.5240617	2137	.7679212	8189	.3331673	1646	237 56 63.5	26.1	0.10	945786
20.5	.5166090	7621	.7720576	:9563	.3349615	9595	238 26 82.7	45.2	—0.04	945371
21.0	.5091163	2705	.7761347	0344	.3367301	7287	238 57 42.4	4.8	+0.02	944959
21.5	.5015841	7394	.7801522	0529	.3384728	4721	239 27 62 5	24.9	0.08	944550
22.0	—.4940131	1695	—.7841096	0113	—.3401894	1893	239 57 83 0	45.3	+0.13	944144
22.5	.4864034	5609	.7880066	:9094	.3418799	8805	240 28 43.8	6.1	0.18	943742
23.0	.4787561	9147	.7918430	7469	.3435441	5454	240 58 65.0	27.2	0.23	943342
23.5	.4710715	2312	.7956183	5233	.3451819	1839	241 28 86.6	48.7	0.27	942945
24.0	.4633503	5110	.7993321	2382	.3467930	7958	241 59 48.6	10.6	0.31	942551
24 5	—.4555931	7549	—.8029842	8914	—.3483773	3808	242 29 71.0	32.9	+0.33	942160
25.0	.4478006	9634	.8065743	4826	.3499348	9390	242 59 93.7	55.5	0.35	941772
25.5	.4399733	:1371	.8101020	0114	.3514652	4701	243 30 56.8	18.5	0.36	941388
26.0	.4321118	2766	.8135671	4776	.3529684	9741	244 0 80.2	41.8	0.37	941007
26.5	.4242168	3826	.8169692	8808	.3544443	4507	244 31 43.9	5.5	0.36	940629
27.0	—.4162890	4558	—.8203078	2205	—.3558928	9000	245 1 68.0	29.5	+0.35	940253
27.5	.4083290	4968	.8235828	4966	.3573137	3216	245 31 92.4	53.9	0.33	939880
28.0	.4003375	5062	.8267937	7086	.3587070	7156	246 2 57.0	18.4	0.31	939510
28.5	.3923151	4848	.8299404	8564	.3600724	0817	246 32 81.9	43.3	0 27	939143
29.0	.3842625	4331	.8330227	:9398	.3614099	4199	247 3 47.1	8.4	0.23	938780
29.5	—.3761803	3518	—.8360404	:9586	—.3627194	7301	247 33 72.6	33.8	+0.19	938420
30.0	.3680693	2417	.8389931	9125	.3640007	0120	248 3 98.3	59.4	0.14	938064
30.5	.3599301	:1034	.8418807	8012	.3652537	2657	248 34 64.1	25.1	0.08	937711
Dec. 1.0	.3517633	9375	.8447029	6246	.3664784	4910	249 4 90.1	51.0	+0.03	937362
1.5	.3435606	7447	.8474596	3825	.3676746	6878	249 35 56.4	17.3	—0.03	957017
2.0	—.3353498	5258	—.8501506	0747	—.3688424	8563	250 5 82.9	43.7	—0.09	936677

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9 9
Dec. 2.5	—.3271044	2813	—.8527756	7010	—.3699817	9963	250 36 49.6	10.4	—0.16	936341
3.0	.3188340	:0117	.8553345	2612	.3710923	1076	251 6 76.5	37.2	0.23	936010
3.5	.3105393	7179	.8578271	7551	.3721741	1901	251 37 43.6	4.2	0.30	935683
4.0	.3022210	4004	.8602533	1826	.3732270	2437	252 7 70.9	31.4	0.36	935361
4.5	.2938797	0600	.8626130	5436	.3742511	2685	252 37 98.4	58.8	0.43	935045
5.0	—.2855160	6971	—.8649059	8379	—.3752462	2643	253 8 66.1	26.4	—0.49	934734
5.5	.2771305	3124	.8671319	0653	.3762123	2311	253 38 94.0	54.2	0.55	934428
6.0	.2687240	9067	.8692909	2257	.3771492	1687	254 9 62.0	22.1	0.60	934128
6.5	.2602971	4805	.8713827	3189	.3780569	0771	254 39 90.2	50.3	0.64	933834
7.0	.2518504	:0345	.8734072	3448	.3789354	9564	255 10 58.6	18.6	0.68	933546
7.5	—.2433845	5695	—.8753643	3033	—.3797846	8064	255 40 87.2	47.2	—0.72	933264
8.0	.2349001	:0859	.8772537	1941	.3806045	6271	256 11 55.9	15.8	0.75	932989
8.5	.2263979	5845	.8790754	0172	.3813950	4184	256 41 84.8	44.6	0.77	932720
9.0	.2178785	:0658	.8808293	7725	.3821560	1802	257 12 53.9	13.6	0.79	932457
9.5	.2093424	5305	.8825152	4508	.3828875	9125	257 42 83.2	42.8	0.80	932201
10.0	—.2007902	9790	—.8841330	0793	—.3835894	6152	258 13 52.7	12.2	—0.80	931951
10.5	.1922226	4121	.8856826	6300	.3842617	2883	258 43 82.4	41.8	0.79	931708
11.0	.1836401	8303	.8871639	1127	.3849042	9315	259 14 52.2	11.5	0.77	931472
11.5	.1750434	2343	.8885768	5270	.3855171	5452	259 44 82.3	41.6	0.75	931243
12.0	.1664331	6247	.8899211	8727	.3861002	1290	260 15 52.6	11.8	0.72	931020
12.5	—.1578099	:0022	—.8911968	1499	—.3866534	6829	260 45 83.1	42.3	—0.68	930804
13.0	.1491743	3673	.8924037	3583	.3871767	2069	261 16 53.9	13.0	0.64	930594
13.5	.1405270	7207	.8935417	4978	.3876702	7011	261 46 84.9	43.9	0.58	930391
14.0	.1318687	:0630	.8946106	5682	.3881337	1653	262 17 56.0	14.9	0.54	930195
14.5	.1231999	3949	.8956104	5695	.3885672	5995	262 47 87.4	46.2	0.48	930005
15.0	—.1145213	7169	—.8965409	5016	—.3889706	:0035	263 18 59.0	17.7	—0.42	929822
15.5	.1058335	:0297	.8974020	3642	.3893439	3775	263 48 90.8	49.4	0.36	929645
16.0	.0971372	3340	.8981937	1575	.3896871	7213	264 19 62.8	21.3	0.30	929474
16.5	.0884330	6304	.8989158	8811	.3900000	0349	264 49 95.0	53.5	0.23	929309
17.0	.0797215	9194	.8995683	5352	.3902827	3182	265 20 67.5	25.9	0.16	929151
17.5	—.0710035	2020	—.9001511	1195	—.3905352	5714	265 50 100.2	58.6	—0.09	928998
18.0	.0622795	4785	.9006640	6340	.3907573	7943	266 21 73.0	31.3	—0.03	928851
18.5	.0535502	7497	.9011069	0784	.3909491	9869	266 52 46.1	4.3	+0.03	928709
19.0	.0448164	:0164	.9014797	4528	.3911105	1490	267 22 79.4	37.5	0.09	928573
19.5	.0360787	2792	.9017824	7620	.3912415	2807	267 53 52.9	10.9	0.15	928441
20.0	—.0273377	5386	—.9020150	:9912	—.3913421	3821	268 23 86.6	44.5	+0.20	928315
20.5	.0185942	7956	.9021773	1551	.3914122	4529	268 54 60.5	18.3	0.24	928193
21.0	.0098489	:0507	.9022692	2486	.3914518	4933	269 24 94.6	52.3	0.28	928077
21.5	—.0011025	3047	.9022906	2716	.3914610	5032	269 55 68.8	26.4	0.31	927965
22.0	+.0076444	4418	.9022415	2242	.3914396	4826	270 26 43.2	0.7	0.33	927857
22.5	+.0163910	1880	—.9021219	1063	—.3913877	4314	270 56 77.7	35.2	+0.35	927753
23.0	.0251364	:9331	.9019319	9180	.3913053	3498	271 27 52.4	9.8	0.36	927654
23.5	.0338801	6764	.9016714	6592	.3911923	2375	271 57 87.2	44.5	0.36	927560
24.0	.0426214	4174	.9013404	3299	.3910488	0947	272 28 62.1	19.3	0.35	927470
24.5	.0513595	1552	.9009390	9302	.3908747	9213	272 58 97.2	54.3	0.33	927384
25.0	+.0600936	:8890	—.9004671	4600	—.3906701	7174	273 29 72.3	29.3	+0.31	927302
25.5	.0688230	6181	.8999248	9194	.3904349	4829	274 0 47.5	4.4	0.28	927224
26.0	.0775469	3417	.8993121	3085	.3901692	2179	274 30 82.7	39.5	0.25	927150
26.5	.0862647	0592	.8986291	6272	.3898731	9225	275 1 58.0	14.8	0.21	927080
27.0	.0949757	7700	.8978758	8757	.3895466	5967	275 31 93.3	50.0	0.16	927014
27.5	+.1036791	4732	—.8970523	0539	—.3891896	2404	276 2 68.6	25.3	+0.11	926953
28.0	.1123742	1681	.8961587	1621	.3888023	8537	276 33 43.9	0.5	+0.06	926896
28.5	.1210603	:8540	.8951950	2002	.3883846	4367	277 3 79.2	35.7	0.00	926844
29.0	.1297367	5302	.8941614	1684	.3879365	9892	277 34 54.5	10.9	—0.07	926796
29.5	.1384027	1960	.8930579	1667	.3874581	5114	278 4 89.8	46.1	0.14	926753
30.0	+.1470576	:8508	—.8918847	8953	—.3869495	:0034	278 35 65.1	21.3	—0.20	926714
30.5	.1557007	4939	.8906419	6543	.3864107	4652	279 5 100.4	56.5	0.27	926679
31.0	.1643313	1245	.8893296	3438	.3858417	8968	279 36 75.6	31.6	0.33	926649
31.5	.1729488	7420	.8879480	9640	.3852427	2984	280 7 50.8	6.8	0.39	926625
32.0	+.1815525	3458	—.8864973	5151	—.3846136	6699	280 37 85.9	41.8	—0.45	926606

MERCURY.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
2965	−0.3976	−0.0593	+0.0305	9.6054	188 15.9	+5.91	+ 0.88	−0.45
2970	0.3848	0.1859	0.0187	9.6311	205 38.2	4.78	2.31	0.24
2975	0.3356	0.2952	+0.0051	9.6503	221 17.9	3.66	3.22	−0.06
2980	0.2585	0.3803	−0.0090	9.6627	235 51.6	2.59	3.80	+0.09
2985	0.1618	0.4366	0.0224	9.6685	249 49.3	1.56	4.20	0.22
2990	−0.0532	0.4611	0.0341	9.6678	263 37.0	+0.52	4.45	0.33
2995	+0.0592	0.4518	0.0434	9.6606	277 40.0	−0.60	4.58	0.44
3000	0.1670	0.4078	0.0493	9.6468	292 24.9	1.86	4.56	0.55
3005	0.2603	0.3294	0.0510	9.6263	308 22.8	3.35	4.24	0.66
3010	0.3281	0.2191	0.0478	9.5993	326 12.1	5.09	3.39	0.74
3015	0.3572	−0.0835	0.0389	9.5669	346 39.2	6.93	+ 1.62	0.76
3020	0.3339	+0.0635	0.0245	9.5325	10 33.0	8.21	− 1.56	0.60
3025	0.2496	0.1977	−0.0057	9.5030	38 19.6	7.53	5.96	+0.17
3030	+0.1100	0.2871	+0.0143	9.4883	69 10.8	−3.67	9.58	−0.48
3035	−0.0563	0.3060	0.0308	9.4950	100 37.5	+1.79	9.75	0.98
3040	0.2101	0.2528	0.0401	9.5201	129 46.4	5.63	6.77	1.07
3045	0.3229	0.1486	0.0414	9.5537	155 9.2	6.86	3.16	0.88
3050	0.3845	+0.0198	0.0360	9.5874	176 50.4	6.47	− 0.33	0.60
3055	0.3973	−0.1122	0.0260	9.6166	195 34.3	5.47	+ 1.54	0.36
3060	0.3687	0.2329	+0.0133	9.6397	212 10.0	4.32	2.73	−0.16
3065	0.3071	0.3330	−0.0006	9.6561	227 18.9	3.22	3.48	+0.01
3070	0.2211	0.4068	0.0146	9.6658	241 34.6	2.17	3.98	0.14
3075	0.1187	0.4505	0.0274	9.6690	255 25.2	1.14	4.31	0.26
3080	−0.0076	0.4615	0.0382	9.6657	269 16.1	+0.07	4.52	0.37
3085	+0.1040	0.4381	0.0462	9.6558	283 32.7	−1.09	4.60	0.48
3090	0.2071	0.3800	0.0505	9.6393	298 43.2	2.44	4.47	0.59
3095	0.2917	0.2381	0.0504	9.6160	315 21.2	4.03	3.98	0.70
3100	0.3453	0.1664	0.0448	9.5866	334 8.6	5.85	2.82	0.76
3105	0.3548	−0.0241	0.0337	9.5529	355 54.2	7.58	+ 0.52	0.72
3110	0.3072	+0.1212	−0.0172	9.5194	21 22.3	8.27	− 3.27	+0.46
3115	0.1984	0.2413	+0.0026	9.4947	50 35.6	6.33	7.70	−0.09
3120	+0.0435	0.3040	0.0218	9.4884	82 3.5	−1.45	10.14	0.73
3125	−0.1223	0.2922	0.0356	9.5035	112 51.8	+3.67	8.78	1.07
3130	0.2618	0.2151	0.0415	9.5333	140 33.3	6.40	5.26	1.02
3135	0.3541	+0.0979	0.0399	9.5677	164 22.1	6.83	− 1.89	0.77
3140	0.3952	−0.0344	0.0324	9.5999	184 45.2	6.10	+ 0.53	0.50
3145	0.3902	0.1632	0.0211	9.6268	202 31.5	5.00	2.09	0,27
3150	0.3472	0.2764	+0.0077	9.6472	218 27.5	3.87	3.08	−0.09
3155	0.2747	0.3665	−0.0064	9.6609	233 11.1	2.79	3.71	+0.06
3160	0.1810	0.4284	0.0200	9.6679	247 13.5	1.74	4.13	0.19
3165	−0.0741	0.4590	0.0321	9.6685	261 1.2	+0.71	4.42	0.31
3170	+0.0381	0.4562	0.0419	9.6625	274 59.4	−0.38	4.57	0.42
3175	0.1474	0.4187	0.0485	9.6499	289 34.2	1.61	4.58	0.53
3180	0.2444	0.3466	0.0511	9.6306	305 15.8	3.05	4.33	0.64
3185	0.3180	0.2420	0.0488	9.6048	322 40.8	4.74	3.61	0.73
3190	0.3553	−0.1104	0.0410	9.5733	342 34.5	6.59	+ 2.05	0.76
3195	0.3429	+0.0360	0.0276	9.5389	5 46.3	8.07	− 0.85	0.64
3200	0.2701	0.1749	−0.0094	9.5077	32 49.7	7.88	5.10	+0.27
3205	+0.1394	0.2752	+0.0108	9.4895	63 14.9	−4.61	9.11	−0.35
3210	−0.0249	0.3082	0.0282	9.4922	94 49.2	+0.81	10.02	0.92
3215	0.1838	0.2675	0.0390	9.5144	124 34.0	5.12	7.45	1.09
3220	−0.3055	+0.1708	+0.0417	9.5471	150 41.1	+6.79	− 3.80	−0.93

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

MERCURY.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° '	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3225	−0.3768	+0.0448	+0.0374	9.5813	173 1.0	+6.62	−0.79	−0.66
3230	0.3983	−0.0879	0.0281	9.6116	192 14.3	5.67	+1.25	0.40
3235	0.3768	0.2115	0.0159	9.6359	209 10.7	4.54	2.54	0.19
3240	0.3208	0.3161	+0.0020	9.6535	224 33.2	3.42	3.36	−0.02
3245	0.2388	0.3952	−0.0120	9.6645	238 56.6	2.36	3.90	+0.12
3250	0.1388	0.4447	0.0251	9.6669	252 50.0	1.33	4.26	0.24
3255	−0.0287	0.4620	0.0364	9.6668	266 38.9	+0.28	4.49	0.35
3260	+0.0834	0.4452	0.0450	9.6582	280 48.6	−0.86	4.60	0.47
3265	0.1889	0.3936	0.0501	9.6429	295 46.6	2.17	4.51	0.58
3270	0.2778	0.3079	0.0508	9.6209	312 5.3	3.71	4.11	0.68
3275	0.3383	0.1912	0.0463	9.5926	330 24.8	5.49	3.11	0.75
3280	0.3570	−0.0517	0.0362	9.5594	351 33.2	7.29	+1.06	0.74
3285	0.3208	+0.0949	0.0207	9.5253	16 17.3	8.29	−2.45	0.53
3290	0.2231	0.2222	−0.0012	9.4982	44 51.9	6.96	6.92	+0.04
3295	+0.0746	0.2977	+0.0184	9.4879	76 6.4	−2.50	9.96	−0.62
3300	−0.0922	0.3000	0.0335	9.4993	107 16.0	+2.85	9.28	1.04
3305	0.2389	0.2335	0.0410	9.5270	135 39.2	6.10	5.97	1.05
3310	0.3407	+0.1217	0.0407	9.5612	160 11.0	6.87	−2.45	0.83
3315	0.3912	−0.0094	0.0342	9.5942	181 9.1	6.28	+0.15	0.55
3320	0.3943	0.1399	0.0234	9.6222	199 21.1	5.21	1.85	0.31
3325	0.3577	0.2567	+0.0103	9.6439	215 34.6	4.08	2.93	−0.12
3330	0.2902	0.3515	−0.0037	9.6588	230 29.3	2.98	3.61	+0.04
3335	−0.1999	0.4190	−0.0175	9.6671	244 37.2	+1.94	+4 07	+0.17

VENUS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° '	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
2965	−0.2296	+0.6807	+0.0233	9.8566	108 34.3	+ 7.51	−22.26	−0.76
2970	0.3232	0.6411	0.0281	9.8564	116 41.3	10.58	20.98	0.92
2975	0.4103	0.5888	0.0324	9.8564	124 48.5	13.44	19.28	1.06
2980	0.4893	0.5248	0.0359	9.8564	132 55.7	16.02	17.18	1.18
2985	0.5586	0.4503	0.0388	9.8564	141 2.9	18.28	14.74	1.27
2990	0.6166	0.3668	0.0409	9.8565	149 9.9	20.17	11.99	1.34
2995	0.6625	0.2761	0.0421	9.8567	157 16.6	21.64	9.02	1.38
3000	0.6952	0.1798	0.0426	9.8569	165 22.9	22.67	5.87	1.39
3005	0.7141	+0.0800	0.0422	9.8572	173 28.6	23.24	− 2.61	1.37
3010	0.7188	−0.0214	0.0409	9.8575	181 33.7	23.35	+ 0.69	1.33
3015	0.7093	0.1224	0.0389	9.8578	189 38.0	22.99	3.96	1.26
3020	0.6859	0.2209	0.0360	9.8582	197 41.5	22.17	7.14	1.17
3025	0.6489	0.3151	0.0325	9.8586	205 44.2	20.92	10.16	1.05
3030	0.5993	0.4032	0.0283	9.8590	213 45.9	19.27	12.96	0.91
3035	0.5379	0.4833	0.0236	9.8594	221 46.9	17.24	15.46	0.76
3040	0.4660	0.5541	0.0184	9.8598	229 46.8	14.89	17.71	0.59
3045	0.3850	0.6140	0.0120	9.8602	237 45.9	12.27	19.57	0.41
3050	0.2966	0.6620	0.0071	9.8606	245 44.0	9.43	21.05	0.23
3055	0.2025	0.6973	+0.0012	9.8610	253 41.4	6.42	22.12	−0.04
3060	0.1044	0.7191	−0.0048	9.8613	261 38.0	3.30	22.75	+0.15
3065	−0.0043	0.7270	0.0106	9.8616	269 34.0	+ 0.13	22.96	0.34
3070	+0.0958	0.7210	0.0163	9.8618	277 29.4	− 3.02	22.73	0.52
3075	+0.1942	−0.7011	−0.0216	9.8620	285 24.3	− 6.11	+22.08	+0.68

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

VENUS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′			
3080	+0.2888	−0.6678	−0.0266	9.8622	293 18.8	− 9.08	+21.01	+0.84
3085	0.3778	0.6217	0.0310	9.8622	301 13.1	11.87	19.55	0.97
3090	0.4597	0.5638	0.0348	9.8623	309 7.3	14.45	17.72	1.09
3095	0.5327	0.4950	0.0380	9.8623	317 1.5	16.75	15.56	1.19
3100	0.5956	0.4163	0.0404	9.8622	324 55.8	18.73	13.11	1.27
3105	0.6471	0.3306	0.0421	9.8620	332 50.3	20.37	10.41	1.32
3110	0.6861	0.2381	0.0429	9.8618	340 45.2	21.63	7.51	1.35
3115	0.7120	0.1410	0.0430	9.8616	348 40.5	22.48	4.45	1.36
3120	0.7243	−0.0412	0.0422	9.8613	356 36.4	22.91	+ 1.30	1.33
3125	0.7226	+0.0594	0.0406	9.8610	4 33.0	22.91	− 1.88	1.29
3130	0.7070	0.1589	0.0382	9.8607	12 30.3	22.47	5.05	1.21
3135	0.6776	0.2552	0.0350	9.8603	20 28.5	21.59	8.13	1.12
3140	0.6351	0.3467	0.0313	9.8599	28 27.4	20.30	11.08	1.00
3145	0.5803	0.4314	0.0268	9.8595	36 27.3	18.60	13.63	0.86
3150	0.5142	0.5077	0.0219	9.8591	44 28.1	16.52	16.31	0.70
3155	0.4380	0.5740	0.0165	9.8587	52 29.6	14.42	18.50	0.53
3160	0.3532	0.6291	0.0109	9.8583	60 32.4	11.41	20.33	0.35
3165	0.2615	0.6718	−0.0050	9.8579	68 35.9	8.47	21.77	+0.16
3170	0.1646	0.7013	+0.0010	9.8575	76 40.1	5.35	22.78	−0.03
3175	+0.0654	0.7169	0.0070	9.8572	84 45.1	− 2.10	23.34	0.22
3180	−0.0369	0.7183	0.0129	9.8570	92 50.8	+ 1.20	23.42	0.42
3185	0.1376	0.7055	0.0184	9.8567	100 57.0	4.49	23.04	0.60
3190	0.2355	0.6786	0.0237	9.8566	109 3.6	7.70	22.19	0.77
3195	0.3287	0.6383	0.0284	9.8564	117 10.6	10.75	20.89	0.93
3200	0.4154	0.5852	0.0326	9.8564	125 17.8	13.60	19.16	1.06
3205	0.4939	0.5215	0.0361	9.8564	133 25.0	16.16	17.04	1.18
3210	0.5624	0.4454	0.0389	9.8564	141 32.2	18.41	14.58	1.27
3215	0.6198	0.3615	0.0410	9.8566	149 39.2	20.27	11.82	1.34
3220	0.6649	0.2703	0.0422	9.8567	157 45.9	21.71	8.83	1.38
3225	0.6968	0.1738	0.0426	9.8569	165 52.1	22.72	5.67	1.39
3230	0.7148	+0.0738	0.0421	9.8572	173 57.8	23.27	− 2.40	1.37
3235	0.7186	−0.0276	0.0408	9.8575	182 2.8	23.34	+ 0.90	1.33
3240	0.7083	0.1285	0.0387	9.8579	190 7.1	22.95	4.16	1.25
3245	0.6840	0.2268	0.0358	9.8582	198 10.6	22.11	7.33	1.16
3250	0.6463	0.3207	0.0323	9.8586	206 13.2	20.83	10.34	1.04
3255	0.5958	0.4083	0.0281	9.8590	214 14.9	19.15	13.12	0.90
3260	0.5338	0.4879	0.0233	9.8595	222 15.7	17.11	15.64	0.75
3265	0.4613	0.5580	0.0181	9.8599	230 15.6	14.74	17.84	0.58
3270	0.3798	0.6173	0.0126	9.8603	238 14.6	12.11	19.67	0.40
3275	0.2910	0.6646	0.0068	9.8607	246 12.7	9.25	21.13	0.21
3280	0.1966	0.6990	+0.0008	9.8610	254 10.0	6.23	22.17	−0.03
3285	−0.0983	0.7200	−0.0051	9.8613	262 6.6	+ 3.11	22.78	+0.16
3290	+0.0018	0.7270	0.0110	9.8616	270 2.5	− 0.05	22.96	0.35
3295	0.1019	0.7202	0.0166	9.8618	277 57.9	3.21	22.70	0.52
3300	0.2000	0.6995	0.0219	9.8620	285 52.7	6.30	22.02	0.69
3305	0.2944	0.6654	0.0268	9.8622	293 47.2	9.26	20.93	0.84
3310	0.3802	0.6185	0.0312	9.8623	301 41.5	12.04	19.45	0.98
3315	0.4644	0.5599	0.0350	9.8623	309 35.7	14.60	17.60	1.10
3320	0.5360	0.4905	0.0381	9.8623	317 29.9	16.88	15.42	1.20
3325	0.5991	0.4118	0.0405	9.8622	325 24.1	18.85	12.95	1.28
3330	0.6498	0.3251	0.0421	9.8620	333 18.7	20.46	10.24	1.33
3335	+0.6881	−0.2323	−0.0430	9.8618	341 13.6	−21.65	+ 7.33	+1.36

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

THE EARTH.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′			
2960	−0.0450	+0.9822	0.0000	9.9927	92 37.4	+ 0.63	−13.78	0.00
2970	0.2181	0.9587		9.9927	102 48.8	3.06	13.45	
2980	0.3844	0.9053		9.9928	113 0.5	5.39	12.70	
2990	0.5389	0.8241		9.9932	123 11.1	7.54	11.52	
3000	0.6766	0.7170		9.9938	133 20.3	9.40	9.98	
3010	0.7936	0.5880		9.9946	143 27.7	10.99	8.14	
3020	0.8864	0.4410		9.9956	153 32.7	12.19	6.06	
3030	0.9520	0.2804		9.9966	163 35.0	13.00	3.83	
3040	0.9887	+0.1114		9.9977	173 34.2	13.40	− 1.51	
3050	0.9959	−0.0609		9.9990	183 30.0	13.38	+ 0.82	
3060	0.9736	0.2314		0.0002	193 22.4	12.97	3.09	
3070	0.9225	0.3951		0.0015	203 11.3	12.19	5.22	
3080	0.8443	0.5471		0.0026	212 56.9	11.06	7.17	
3090	0.7417	0.6833		0.0037	222 39.5	9.63	8.89	
3100	0.6179	0.8000		0.0047	232 19.3	7.96	10.33	
3110	0.4764	0.8939		0.0056	241 56.6	6.11	11.47	
3120	0.3214	0.9623		0.0063	251 31.9	4.11	12.29	
3130	− 0.1573	1.0034		0.0068	261 5.6	+ 2.01	12.77	
3140	+ 0.0113	1.0163		0.0071	270 38.2	− 0.14	12.90	
3150	0.1795	1.0006		0.0072	280 10.2	2.28	12.70	
3160	0.3427	0.9568		0.0071	289 42.2	4.36	12.16	
3170	0.4963	0.8863		0.0068	299 14.7	6.32	11.28	
3180	0.6359	0.7908		0.0064	308 48.3	8.12	10.10	
3190	0.7576	0.6728		0.0057	318 23.4	9.72	8.63	
3200	0.8577	0.5357		0.0048	328 0.5	11.07	6.91	
3210	0.9333	0.3834		0.0039	337 40.0	12.13	4.98	
3220	0.9822	0.2201		0.0028	347 22.4	12.86	2.88	
3230	1.0026	−0.0503		0.0016	357 7.8	13.23	+ 0.66	
3240	0.9936	+0.1210		0.0004	6 56.4	13.22	− 1.61	
3250	0.9554	0.2886		9.9991	16 48.4	12.82	3.67	
3260	0.8888	0.4476		9.9979	26 43.8	12.03	6.06	
3270	0.7956	0.5932		9.9967	36 42.6	10.86	8.10	
3280	0.6784	0.7210		9.9956	46 44.5	9.33	9.92	
3290	0.5406	0.8268		9.9947	56 49.2	7.48	11.45	
3300	0.3863	0.9072		9.9939	66 56.3	5.37	12.63	
3310	0.2201	0.9596		9.9932	77 5.3	3.08	13.42	
3320	+ 0.0470	0.9824		9.9928	87 15.8	− 0.66	13.78	
3330	− 0.1276	+0.9750	0.0000	9.9927	97 27.4	+ 1.79	−13.68	0.00

MARS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′			
2960	−0.3374	+1.5674	+0.0417	0.2052	102 9.8	+0.15	−0.67	−0.02
2970	0.4671	1.5444	0.0443	0.2079	106 50.6	0.20	0.65	0.02
2980	0.5935	1.5097	0.0467	0.2102	111 28.1	0.25	0.62	0.02
2990	0.7157	1.4648	0.0487	0.2124	116 2.7	0.29	0.60	0.02
3000	0.8330	1.4101	0.0503	0.2144	120 34.6	0.33	0.57	0.02
3010	0.9448	1.3460	0.0516	0.2162	125 4.1	0.37	0.53	0.02
3020	1.0503	1.2727	0.0526	0.2177	129 31.6	0.41	0.50	0.02
3030	−1.1487	+1.1910	+0.0533	0.2190	133 57.4	+0.45	−0.46	−0.02

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

MARS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
					° '			
3040	−1.2397	+1.1018	+0.0536	0.2200	138 21.9	+0.48	−0.43	−0.02
3050	1.3230	1.0056	0.0535	0.2208	142 45.2	0.51	0.39	0.02
3060	1.3978	0.9029	0.0531	0.2213	147 7.7	0.54	0.35	0.02
3070	1.4636	0.7943	0.0524	0.2216	151 29.8	0.56	0.30	0.02
3080	1.5198	0.6806	0.0513	0.2216	155 51.7	0.58	0.26	0.02
3090	1.5663	0.5625	0.0499	0.2213	160 13.8	0.60	0.22	0.02
3100	1.6029	0.4408	0.0482	0.2208	164 36.4	0.62	0.17	0.02
3110	1.6291	0.3162	0.0462	0.2200	168 59.8	0.63	0.12	0.02
3120	1.6448	0.1894	0.0438	0.2190	173 24.4	0.64	0.07	0.02
3130	1.6496	+0.0615	0.0412	0.2177	177 50.4	0.65	−0.02	0.02
3140	1.6437	−0.0667	0.0384	0.2162	182 18.0	0.65	+0.03	0.02
3150	1.6269	0.1944	0.0353	0.2144	186 47.6	0.65	0.08	0.01
3160	1.5990	0.3208	0.0319	0.2124	191 19.6	0.65	0.13	0.01
3170	1.5601	0.4450	0.0283	0.2101	195 54.4	0.65	0.18	0.01
3180	1.5104	0.5661	0.0243	0.2076	200 32.2	0.64	0.24	0.01
3190	1.4501	0.6333	0.0203	0.2049	205 13.3	0.62	0.29	0.01
3200	1.3796	0.7956	0.0163	0.2020	209 58.0	0.60	0.35	0.01
3210	1.2991	0.9022	0.0121	0.1990	214 46.5	0.58	0.40	−0.01
3220	1.2088	1.0020	0.0077	0.1958	219 39.2	0.55	0.46	0.00
3230	1.1091	1.0940	+0.0034	0.1924	224 36.5	0.52	0.52	0.00
3240	1.0006	1.1774	−0.0010	0.1889	229 38.6	0.48	0.57	0.00
3250	0.8842	1.2514	0.0054	0.1853	234 45.6	0.43	0.62	0.00
3260	0.7607	1.3151	0.0097	0.1816	239 57.8	0.38	0 67	0.00
3270	0.6307	1.3676	0.0140	0.1778	245 15.4	0.33	0.71	+0.01
3280	0.4952	1.4083	0.0181	0.1740	250 38.5	0.26	0.75	0.01
3290	0.3554	1.4367	0.0221	0.1703	256 7.3	0.19	0.78	0.01
3300	0.2125	1.4521	0.0259	0.1666	261 41.8	0.12	0.81	0.01
3310	−0.0676	1.4538	0.0294	0.1630	267 22.0	+0.04	0.83	0.02
3320	+0.0784	1.4411	0.0327	0.1595	273 7.8	−0.05	0.85	0.02
3330	+0.2249	−1.4132	−0.0357	0.1562	278 59.1	−0.14	+0.85	+0.02

JUPITER.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
					° ' "			
2960	+3.31747	−3.84244	−0.06136	0.70559	310 48 48	−114.56	+132.69	+2.12
2970	3.37343	3.78909	0.06282	0.70531	311 41 8	116.72	131.10	2.17
2980	3.42826	3.73449	0.06425	0.70500	312 33 32	118.86	129.48	2.23
2990	3.48264	3.67941	0.06568	0.70472	313 26 0	120.98	127.81	2.28
3000	3.53623	3.62350	0.06709	0.70445	314 18 32	123.07	126.11	2.33
3010	3.58901	3.56676	0.06848	0.70418	315 11 7	125.14	124.36	2.39
3020	3.64098	3.50920	0.06986	0.70392	316 3 47	127.19	122.58	2.44
3030	3.69211	3.45084	0.07123	0.70365	316 56 31	129.21	120.76	2.49
3040	3.74240	3.39170	0.07257	0.70339	317 49 18	131.20	118.91	2.54
3050	3.79183	3.33177	0.07390	0.70313	318 42 9	133.17	117.01	2.60
3060	3.84038	3.27107	0.07522	0.70287	319 35 4	135.11	115.09	2.65
3070	3.88805	3.20963	0.07652	0.70263	320 28 3	137.03	113.12	2.70
3080	3.93483	3.14743	0.07779	0.70238	321 21 5	138.92	111.12	2.75
3090	3.98069	3.08452	0.07905	0.70213	322 14 11	140.78	109.09	2.80
3100	+4.02561	−3.02089	−0.08029	0.70189	323 7 21	−142.61	+107.01	+2.84

Nota. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

JUPITER.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′ ″			
3110	+4.06064	−2.95655	−0.08151	0.70164	324 0 34	+144.41	+104.91	+2.89
3120	4.11270	2.89154	0.08271	0.70141	324 53 51	146.18	102.77	2.94
3130	4.15481	2.82585	0.08390	0.70117	325 47 11	147.91	100.60	2.99
3140	4.19595	2.75949	0.08507	0.70094	326 40 35	149.62	98.40	3.03
3150	4.23610	2.69250	0.08621	0.70071	327 34 2	151.29	96.16	3.08
3160	4.27526	2.62487	0.08733	0.70049	328 27 32	152.92	93.89	3.12
3170	4.31342	2.55662	0.08844	0.70027	329 21 6	154.52	91.59	3.17
3180	4.35056	2.48778	0.08953	0.70005	330 14 48	156.09	89.26	3.21
3190	4.38668	2.41834	0.09059	0.69983	331 8 23	157.62	86.89	3.26
3200	4.42177	2.34834	0.09163	0.69962	332 2 7	159.11	84.50	3.30
3210	4.45582	2.27778	0.09265	0.69941	332 55 53	160.57	82.08	3.34
3220	4.48881	2.20669	0.09365	0.69921	333 49 43	161.98	79.63	3.38
3230	4.52074	2.13507	0.09463	0.69901	334 43 35	163.36	77.15	3.42
3240	4.55161	2.06295	0.09558	0.69881	335 37 31	164.70	74.65	3.46
3250	4.58140	1.99034	0.09651	0.69862	336 31 29	166.00	72.12	3.50
3260	4.61009	1.91727	0.09742	0.69843	337 25 30	167.26	69.56	3.53
3270	4.63770	1.84373	0.09830	0.69825	338 19 34	168.47	66.98	3.57
3280	4.66420	1.76975	0.09916	0.69807	339 13 41	169.64	64.37	3.61
3290	4.68958	1.69535	0.10000	0.69789	340 7 51	170.77	61.74	3.64
3300	4.71385	1.62055	0.10081	0.69772	341 2 3	171.87	59.08	3.68
3310	4.73700	1.54536	0.10160	0.69755	341 56 17	172.91	56.41	3.71
3320	4.75902	1.46980	0.10237	0.69739	342 50 34	173.91	53.71	3.74
3330	+4.77989	−1.39389	−0.10311	0.69723	343 44 54	−174.86	+ 50 99	+3.77

SATURN.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′ ″			
2960	−6.81428	−7.15589	+0.39220	0.99516	226 22 50	+9.53	+10.00	−0.55
2970	6.77676	7.19431	0.39133	0.99525	226 41 29	9.47	10.05	0.55
2980	6.73904	7.23251	0.39044	0.99534	227 0 8	9.41	10.10	0.55
2990	6.70112	7.27048	0.38954	0.99543	227 18 46	9.35	10.15	0.55
3000	6.66299	7.30823	0.38863	0.99552	227 37 24	9.29	10.19	0.54
3010	6.62466	7.34576	0.38771	0.99561	227 56 1	9.23	10.24	0.54
3020	6.58613	7.38307	0.38678	0.99569	228 14 38	9.17	10.28	0.54
3030	6.54740	7.42015	0.38584	0.99578	228 33 14	9.11	10.33	0.54
3040	6.50847	7.45701	0.38489	0.99587	228 51 50	9.06	10.37	0.54
3050	6.46934	7.49364	0.38392	0.99595	229 10 25	9.00	10.42	0.54
3060	6.43001	7.53004	0.38295	0.99604	229 29 0	8.94	10.46	0.53
3070	6.39049	7.56621	0.38197	0.99613	229 47 35	8.88	10.51	0.53
3080	6.35078	7.60215	0.38097	0.99621	230 6 9	8.81	10.55	0.53
3090	6.31087	7.63786	0.37996	0.99630	230 24 43	8.75	10.60	0.53
3100	6.27078	7.67334	0.37894	0.99638	230 43 16	8.69	10.64	0.53
3110	6.23050	7.70859	0.37791	0.99646	231 1 49	8.63	10.68	0.52
3120	6.19003	7.74360	0.37687	0.99655	231 20 21	8.57	10.72	0.52
3130	6.14937	7.77838	0.37581	0.99663	231 38 53	8.51	10.76	0.52
3140	6.10853	7.81292	0.37474	0.99671	231 57 24	8.45	10.81	0.52
3150	6.06750	7.84722	0.37366	0.99679	232 15 55	8.39	10.85	0.52
3160	6.02620	7.88128	0.37257	0.99687	232 34 25	8.33	10.89	0.51
3170	−5.98490	−7.91511	+0.37147	0.99695	232 52 55	+8.27	+10.93	−0.51

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16

SATURN.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′ ″			
3180	−5.94333	−7.94870	+0.37036	0.99703	233 11 25	+8.20	+10.97	−0.51
3190	5.90158	7.98205	0.36924	0.99711	233 29 54	8.14	11.01	0.51
3200	5.85965	8.01515	0.36810	0.99719	233 48 23	8.08	11.05	0.51
3210	5.81754	8.04801	0.36695	0.99727	234 6 51	8.02	11.09	0.51
3220	5.77526	8.08063	0.36579	0.99734	234 25 19	7.95	11.13	0.50
3230	5.73281	8.11300	0.36462	0.99742	234 43 47	7.89	11.17	0.50
3240	5.69019	8.14513	0.36344	0.99750	235 2 14	7.83	11.20	0.50
3250	5.64740	8.17701	0.36225	0.99757	235 20 41	7.77	11.24	0.50
3260	5.60444	8.20865	0.36105	0.99765	235 39 7	7.70	11.28	0.50
3270	5.56131	8.24004	0.35984	0.99772	235 57 33	7.64	11.32	0.49
3280	5.51802	8.27119	0.35862	0.99780	236 15 58	7.58	11.36	0.49
3290	5.47456	8.30209	0.35739	0.99787	236 34 23	7.51	11.40	0.49
3300	5.43094	8.33274	0.35614	0.99794	236 52 48	7.45	11.43	0.49
3310	5.38716	8.36314	0.35488	0.99801	237 11 12	7.39	11.47	0.49
3320	5.34321	8.39328	0.35362	0.99809	237 29 36	7.32	11.50	0.48
3330	5.29910	8.42317	0.35235	0.99816	237 48 0	7.26	11.54	0.48
3340	−5.25484	−8.45281	+0.35106	0.99823	238 6 23	+7.19	+11.57	−0.48

URANUS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′ ″			
2960	−2.03189	+18.76705	+0.10020	1.27594	96 10 46	+0.06	−0.53	0.00
3000	2.18950	18.74222	0.10214	1.27577	96 39 48	0.06	0.53	0.00
3040	2.34699	18.71613	0.10407	1.27561	97 8 51	0.07	0.53	0.00
3080	2.50433	18.68873	0.10600	1.27545	97 37 56	0.07	0.53	0.00
3120	2.66153	18.66002	0.10792	1.27530	98 7 3	0.08	0.53	0.00
3160	2.81851	18.63001	0.10984	1.27514	98 36 11	0.08	0.53	0.00
3200	2.97533	18.59870	0.11175	1.27498	99 5 20	0.08	0.53	0.00
3240	3.13197	18.56607	0.11364	1.27482	99 34 31	0.09	0.53	0.00
3280	3.28838	18.53211	0.11554	1.27467	100 3 43	0.09	0.53	0.00
3320	3.44458	18.49683	0.11743	1.27451	100 32 57	0.10	0.53	0.00
3360	−3.60054	+18.46022	+0.11930	1.27435	101 2 12	+0.10	−0.53	0.00

NEPTUNE.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					° ′			
2960	+29.1956	+6.1011	−0.8165	1.47476	11 49.0	−0.28	−0.06	+0.01
3000	29.1690	6.2248	0.8183	1.47476	12 3.6	0.28	0.06	0.01
3040	29.1418	6.3485	0.8202	1.47475	12 18.2	0.28	0.06	0.01
3080	29.1141	6.4721	0.8220	1.47474	12 32.8	0.28	0.06	0.01
3120	29.0860	6.5956	0.8238	1.47474	12 47.4	0.28	0.06	0.01
3160	29.0573	6.7190	0.8256	1.47473	13 2.0	0.28	0.06	0.01
3200	29.0280	6.8423	0.8274	1.47473	13 16.6	0.28	0.06	0.01
3240	28.9982	6.9655	0.8292	1.47472	13 31.2	0.28	0.06	0.01
3280	28.9679	7.0886	0.8310	1.47471	13 45.8	0.28	0.07	0.01
3320	+28.9370	+7.2115	−0.8327	1.47471	14 0.4	−0.28	−0.07	+0.01

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

INCLINATIONS AND NODES.

Planets.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury . . .	7 0 8.8	+0.01952	46 39 20	11.639
Venus	3 23 36.3	+0.01195	75 25 35	9.001
Mars	1 51 2.1	−0.00586	48 27 42	7.579
Jupiter	1 18 39.5	−0.05669	99 1 38	9.993
Saturn	2 29 21.2	−0.03824	112 24 8	8.570
Uranus	0 46 29.8	+0.00834	73 16 44	4.898
Neptune . . .	1 46 29.0		130 12 8	

LOGARITHMS OF MASSES.

Sun's = 1.

Mercury,	93.3129	The Earth,	94.44985	Jupiter,	96.979689	Uranus,	95.60371
Venus,	94.4089	Mars,	93.57176	Saturn,	96.45573	Neptune,	95.72630

ECLIPSES IN 1867.

In the year 1867 there will be four Eclipses; two of the Sun, and two of the Moon.

I. An Annular Eclipse of the Sun, March 5, 1867, invisible at Washington, with the following elements: —

Washington mean time of ☌ in Right Ascension, March $5^d\ 17^h\ 4^m\ 46^s.1$.

Sun's and Moon's R. A.	$23^h\ 6^m\ 15^s.98$	Hourly Motions	$9^s.27$ and $127^s.78$
Sun's Declination	$-\ 5°\ 45'\ 19''.8$	Hourly Motion	$+\ 0'\ 58''.1$
Moon's Declination	$-\ 4\ 59\ \ 7.9$	" "	$+10\ \ 3.7$
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 6.9
Moon's Equa. Hor. Par.	57 18.7	" "	15 36.3

From these elements may be deduced the following results: —

Eclipse begins on the Earth, March $5^d\ 14^h\ 8^m.4$, Washington mean time, in longitude 297° 54′.4 West from Washington, and in latitude 12° 42′.6 North.

Central Eclipse begins on the Earth $15^h\ 28^m.0$, in longitude 315° 17′.1 West from Washington, and in latitude 33° 32′.5 North.

Central Eclipse at Noon $17^h\ 4^m.8$, in longitude 253° 18′.1 West from Washington, and in latitude 48° 29′.5 North.

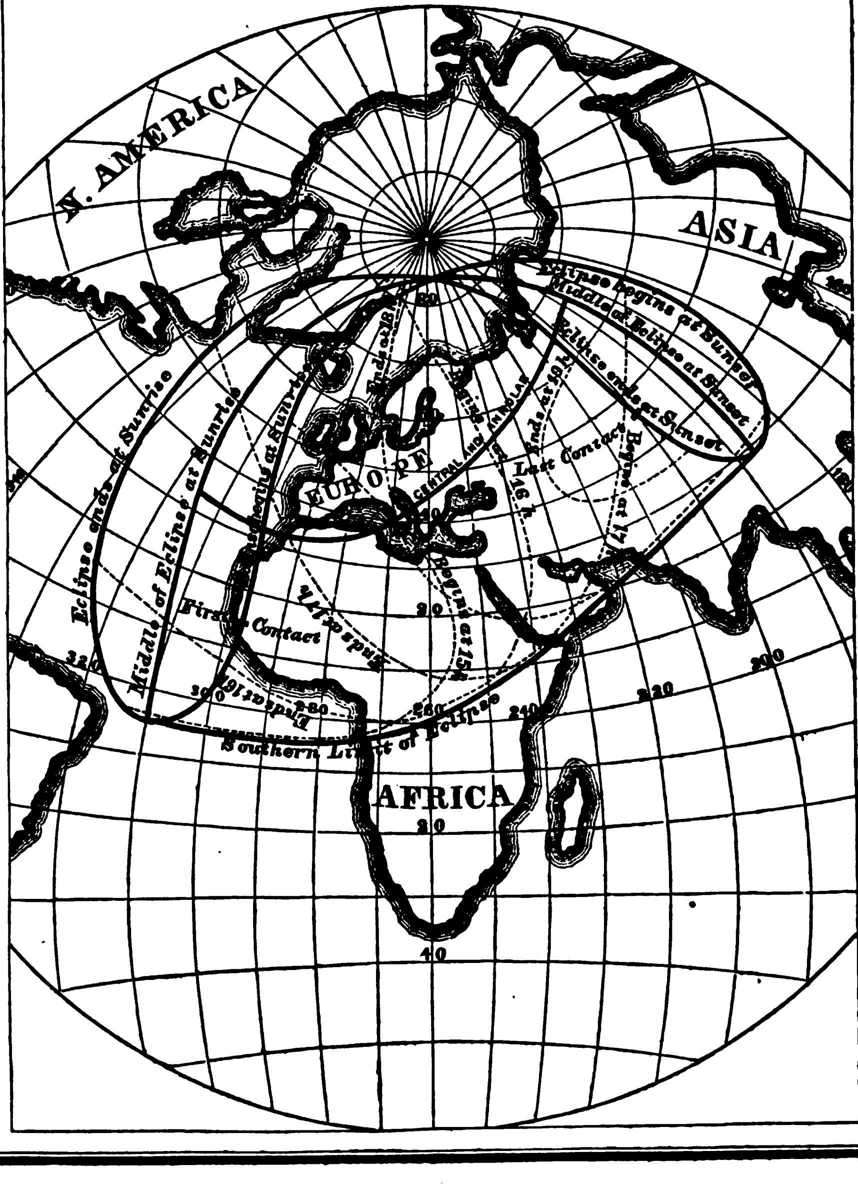
Central Eclipse ends on the Earth $17^h\ 48^m.4$, in longitude 188° 2′.8 West from Washington, and in latitude 67° 17′.6 North.

Eclipse ends on the Earth $19^h\ 8^m.0$, in longitude 200° 12′.7 West from Washington, and in latitude 46° 48′.6 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.99	9.99	—9.02	—8.98	° ′ ″
14 0	—1.58968	+0.87455	—0.23573	7558	7974	4675	4404	207 5 57.2
14 10	1.50367	0.90099	0.20928	7561	7976	4488	4198	209 35 59.4
14 20	1.41765	0.92743	0.18282	7563	7978	4301	3993	212 6 1.6
14 30	1.33163	0.95386	0.15636	7565	7980	4114	3787	214 36 3.8
14 40	1.24561	0.98030	0.12990	7567	7982	3927	3582	217 6 6.0
14 50	1.15958	1.00673	0.10344	7569	7984	3739	3376	219 36 8.2
15 0	1.07355	1.03316	0.07698	7571	7986	3552	3170	222 6 10.4
15 10	0.98752	1.05960	0.05052	7573	7988	3364	2964	224 36 12.5
15 20	0.90149	1.08603	—0.02405	7575	7990	3177	2758	227 6 14.7
15 30	—0.81545	+1.11246	+0.00242	7577	7992	2989	2552	229 36 16.9

ANNULAR ECLIPSE
OF
MARCH 5, 1867.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.99	9.99	—9.02	—8.98	° ′ ″
15 40	—0.72941	+1.13890	+0.02888	7580	7994	2801	2346	232 6 19.1
15 50	0.64337	1.16533	0.05535	7582	7996	2614	2139	234 36 21.3
16 0	0.55732	1.19176	0.08182	7584	7997	2426	1983	237 6 23.5
16 10	0.47128	1.21820	0.10829	7586	7999	2238	1726	239 36 25.7
16 20	0.38523	1.24463	0.13476	7588	8001	2050	1519	242 6 27.9
16 30	0.29918	1.27106	0.16123	7590	8003	1861	1313	244 36 30.1
16 40	0.21313	1.29750	0.18770	7592	8005	1673	1106	247 6 32.3
16 50	0.12708	1.32393	0.21417	7594	8007	1485	0899	249 36 34.5
17 0	—0.04103	1.35036	0.24064	7596	8009	1296	0692	252 6 36.8
17 10	+0.04502	1.37680	0.26711	7598	8011	1108	0485	254 36 39.0
17 20	0.13107	1.40323	0.29359	7600	8013	0919	0277	257 6 41.2
17 30	0.21713	1.42966	0.32007	7603	8015	0731	*070	259 36 43.4
17 40	0.30318	1.45609	0.34655	7605	8017	0542	9862	262 6 45.6
17 50	0.38923	1.48252	0.37303	7607	8018	0353	9655	264 36 47.8
18 0	0.47528	1.50895	0.39951	7609	8020	*164	9447	267 6 50.0
18 10	0.56133	1.53539	0.42599	7611	8022	9975	9239	269 36 52.2
18 20	0.64738	1.56182	0.45248	7613	8024	9786	9031	272 6 54.4
18 30	0.73342	1.58825	0.47897	7615	8026	9596	8823	274 36 56.6
18 40	0.81947	1.61468	0.50546	7617	8028	9407	8615	277 6 58.8
18 50	0.90551	1.64111	0.53195	7619	8030	9218	8407	279 37 1.0
19 0	0.99155	1.66754	0.55844	7621	8032	9028	8198	282 7 3.2
19 10	+1.07759	+1.69397	+0.58493	7624	8034	8838	7990	284 37 5.4

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
15 20	+0.54012	+0.52186	16 40	+0.75158	+0.73361
15 30	0.56655	0.54833	16 50	0.77801	0.76008
15 40	0.59299	0.57479	17 0	0.80444	0.78656
15 50	0.61942	0.60126	17 10	0.83088	0.81303
16 0	0.64585	0.62773	17 20	0.85731	0.83951
16 10	0.67229	0.65420	17 30	0.88374	0.86599
16 20	0.69872	0.68067	17 40	0.91017	0.89247
16 30	+0.72515	+0.70714	17 50	+0.93660	+0.91895

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000001, and by numerically decreasing log G by 0.000094 and increasing log H by 0.000103.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
14 0	+8601.0	+2643.5	+2645.5	+143.35	+44.06	+44.09
14 30	8602.1	2643.5	2645.9	143.37	44.06	44.10
15 0	8603.0	2643.4	2646.2	143.38	44.06	44.10
15 30	8603.7	2643.4	2646.6	143.39	44.06	44.11
16 0	+8604.3	+2643.3	+2646.9	+143.40	+44.06	+44.11

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
$16^{h}\ 30^{m}$	+8604.7	+2643.3	+2647.2	+143.41	+44.05	+44.12
17 0	8605.0	2643.2	2647.5	143.42	44.05	44.12
17 30	8605.0	2643.2	2647.9	143.42	44.05	44.13
18 0	8604.8	2643.2	2648.2	143.41	44.05	44.14
18 30	8604.4	2643.2	2648.6	143.41	44.05	44.14
19 0	8603.7	2643.2	2649.0	143.39	44.05	44.15
19 30	+8602.8	+2643.2	+2649.4	+143.38	+44.05	+44.16

II. A Partial Eclipse of the Moon, March 19, 1867, visible at Washington, with the following elements: —

Washington mean time of ☍ in Right Ascension, March $19^{d}\ 15^{h}\ 20^{m}\ 30^{s}.5$.

Sun's Right Ascension	$23^{h}\ 57^{m}\ 22^{s}.62$	Hourly Motion	$9^{s}.11$
Moon's Right Ascension	11 57 22.62	" "	125.69
Sun's Declination	$-0^{\circ}\ 17'\ 4''.2$	Hourly Motion	$+\ 0'\ 59''.2$
Moon's Declination	+0 50 54.9	" "	—10 19.7
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 3.3
Moon's Equa. Hor. Par.	57 2.5	" "	15 31.9

From these elements may be deduced the following results: —

Moon enters Penumbra, March	$19^{d}\ 12^{h}\ 56^{m}.8$	Washington mean time.	
Moon enters Shadow	19 14 7.4	"	"
Middle of the Eclipse	19 15 40.7	"	"
Moon leaves Shadow	19 17 14.1	"	"
Moon leaves Penumbra	19 18 24.7	"	"

First contact of Shadow with Moon's limb 142° from north point towards the East, when the Moon is in the zenith, in longitude 30° 30′ West from Washington, and in latitude 1° 4′ North.

Last contact of Shadow with Moon's limb 106° from north point towards the West, when the Moon is in the zenith, in longitude 75° 40′ West from Washington, and in latitude 0° 32′ North.

Magnitude of the Eclipse = 0.813 (Moon's diameter = 1).

III. A Total Eclipse of the Sun, August 28, 1867, invisible at Washington, with the following elements: —

Washington mean time of ☌ in Right Ascension, August $28^{d}\ 20^{h}\ 28^{m}\ 56^{s}.3$

Sun's and Moon's R. A.	$10^{h}\ 30^{m}\ 1^{s}.24$	Hourly Motions	$9^{s}.12$ and $139^{s}.68$
Sun's Declination	$+9^{\circ}\ 25'\ 29''.3$	Hourly Motion	$-\ 0'\ 53''.4$
Moon's Declination	+8 36 23.1	" "	—10 7.9
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 50.8
Moon's Equa. Hor. Par.	59 33.0	" "	16 12.8

From these elements may be deduced the following results: —

Eclipse begins on the Earth, August $28^{d}\ 17^{h}\ 44^{m}.8$, Washington mean time, in longitude 353° 26′.4 West from Washington, and in latitude 14° 57′.4 South.

Central Eclipse begins on the Earth $19^h\ 0^m.5$, in longitude 7° 55′.6 West from Washington, and in latitude 36° 17′.8 South.

Central Eclipse at Noon $20^h\ 28^m.9$, in longitude 307° 1′.2 West from Washington, and in latitude 46° 39′.3 South.

Central Eclipse ends on the Earth $21^h\ 8^m.7$, in longitude 249° 52′.2 West from Washington, and in latitude 67° 3′.2 South.

Eclipse ends on the Earth $22^h\ 24^m.5$, in longitude 255° 54′.2 West from Washington, and in latitude 46° 29′.1 South.

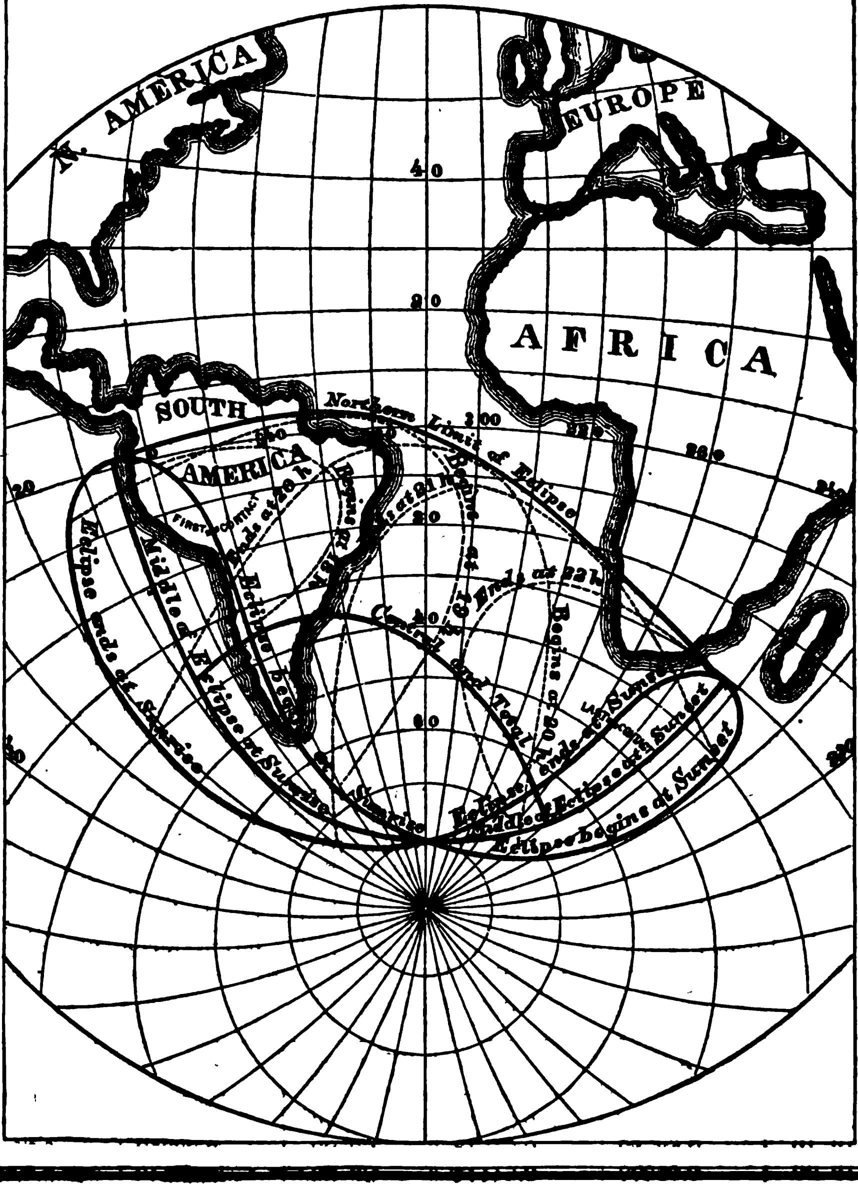
DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.99	9.99	+9.20	+9.22	° ′ ″
17 40	—1.52967	+0.15157	—0.92702	4379	3708	3898	8031	264 46 21.8
17 50	1.43914	0.12562	0.95302	4382	3711	3785	7924	267 16 24.4
18 0	1.34860	0.09967	0.97901	4385	3714	3673	7818	269 46 27.0
18 10	1.25806	0.07372	1.00501	4388	3718	3560	7711	272 16 29.6
18 20	1.16752	0.04777	1.03100	4391	3721	3447	7605	274 46 32.2
18 30	1.07697	+0.02182	1.05699	4394	3724	3335	7498	277 16 34.8
18 40	0.98643	—0.00413	1.08299	4397	3727	3222	7392	279 46 37.4
18 50	0.89588	0.03008	1.10899	4400	3730	3109	7285	282 16 40.0
19 0	0.80533	0.05604	1.13498	4403	3733	2996	7179	284 46 42.7
19 10	0.71478	0.08199	1.16098	4406	3736	2883	7072	287 16 45.3
19 20	0.62423	0.10794	1.18697	4409	3739	2770	6965	289 46 47.9
19 30	0.53368	0.13390	1.21296	4412	3743	2657	6858	292 16 50.5
19 40	0.44313	0.15985	1.23896	4414	3746	2544	6752	294 46 53.1
19 50	0.35258	0.18581	1.26496	4417	3749	2431	6645	297 16 55.7
20 0	0.26203	0.21177	1.29095	4420	3752	2318	6538	299 46 58.3
20 10	0.17148	0.23773	1.31695	4423	3755	2205	6431	302 17 1.0
20 20	—0.08093	0.26369	1.34294	4426	3758	2091	6324	304 47 3.6
20 30	+0.00961	0.28965	1.36893	4429	3761	1978	6217	307 17 6.2
20 40	0.10015	0.31561	1.39493	4432	3765	1865	6110	309 47 8.8
20 50	0.19069	0.34158	1.42093	4435	3768	1752	6003	312 17 11.4
21 0	0.28123	0.36755	1.44692	4438	3771	1638	5896	314 47 14.0
21 10	0.37177	0.39352	1.47292	4441	3774	1525	5789	317 17 16.6
21 20	0.46230	0.41949	1.49891	4444	3777	1411	5682	319 47 19.3
21 30	0.55283	0.44546	1.52490	4447	3780	1298	5575	322 17 21.9
21 40	0.64336	0.47143	1.55090	4450	3783	1184	5468	324 47 24.5
21 50	0.73388	0.49741	1.57690	4453	3786	1071	5361	327 17 27.1
22 0	0.82440	0.52339	1.60289	4456	3789	0957	5254	329 47 29.7
22 10	0.91492	0.54937	1.62889	4459	3792	0844	5146	332 17 32.3
22 20	1.00543	0.57535	1.65489	4462	3796	0730	5039	334 47 34.9
22 30	+1.09594	—0.60133	—1.68088	4465	3799	0617	4932	337 17 37.6

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
19 0	—0.60187	—0.58915	20 10	—0.78356	—0.77112
19 10	0.62782	0.61515	20 20	0.80952	0.79711
19 20	0.65377	0.64114	20 30	0.83548	0.82310
19 30	0.67973	0.66713	20 40	0.86144	0.84910
19 40	0.70568	0.69313	20 50	0.88741	0.87509
19 50	0.73164	0.71913	21 0	0.91338	0.90108
20 0	—0.75760	—0.74512	21 10	—0.93935	—0.92708

TOTAL ECLIPSE
—OF—
AUG. 28, 1867.



A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically decreasing log E and increasing log F by 0.000002, and by numerically increasing log G and decreasing log H by 0.000060.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
17 30	+9052.8	—2595.2	—2599.5	+150.88	—43.25	—43.32
18 0	9053.7	2595.2	2599.5	150.89	43.25	43.32
18 30	9054.3	2595.3	2599.5	150.90	43.25	43.32
19 0	9054.7	2595.4	2599.5	150.91	43.26	43.32
19 30	9054.8	2595.6	2599.5	150.91	43.26	43.32
20 0	9054.7	2595.9	2599.5	150.91	43.26	43.32
20 30	9054.3	2596.3	2599.5	150.90	43.27	43.32
21 0	9053.6	2596.8	2599.5	150.89	43.28	43.33
21 30	9052.7	2597.3	2599.5	150.88	43.29	43.33
22 0	9051.7	2597.8	2599.6	150.86	43.30	43.33
22 30	+9050.6	—2598.3	—2599.7	+150.84	—43.30	—43.33

IV. A Partial Eclipse of the Moon, September 13, 1867, partially visible at Washington, with the following elements: —

Washington mean time of ☍ in Right Ascension, September $13^{d}\ 6^{h}\ 55^{m}\ 44^{s}.2$.

Sun's Right Ascension	$11^{h}\ 25^{m}\ 47^{s}.56$	Hourly Motion	$8^{s}.98$
Moon's Right Ascension	23 25 47.56	" "	123.26
Sun's Declination	$+3^{\circ}\ 41'\ 28''.8$	Hourly Motion	$-\ 0'\ 57''.5$
Moon's Declination	—4 18 20.2	" "	+ 9 56.6
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 54.6
Moon's Equa. Hor. Par.	56 22.9	" "	15 21.1

From these elements may be deduced the following results: —

	d	h	m	
Moon enters Penumbra, September	13	4	34.6	Washington mean time.
Moon enters Shadow	13	5	48.5	" "
Middle of the Eclipse	13	7	18.0	" "
Moon leaves Shadow	13	8	47.5	" "
Moon leaves Penumbra	13	10	1.3	" "

First contact of Shadow with Moon's limb 34° from north point towards the East, when the Moon is in the zenith, in longitude 268° 42′ West from Washington, and in latitude 4° 31′ South.

Last contact of Shadow with Moon's limb 69° from north point towards the West, when the Moon is in the zenith, in longitude 312° 4′ West from Washington, and in latitude 4° 1′ South.

Magnitude of the Eclipse = 0.704 (Moon's diameter = 1).

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Jan. 1	η Libræ	6	+44	−18	3 3.0	+ 6 10 27	+0.3028	0.5365	−.1033	−9.4198	9.9844
1	θ Libræ	4½	+74	+28	7 52.3	+10 50 51	+1.0297	.5374	−.0973	−9.4491	.9821
1	49 Libræ	5½	+56	− 6	11 9.4	− 9 58 5	+0.4976	.5383	−.0933	−9.4439	.9826
2	φ Ophiuchi	5	− 8	−74	2 18.1	+ 4 42 25	−0.5623	.5417	−.0732	−9.4486	.9821
2	24 Scorpii	5	+45	−13	7 22.3	+ 9 37 9	+0.3762	.5431	−.0658	−9.4776	.9795
2	Venus		+27	−30	12 30.2	− 9 24 39	+0.0828	.5440	−.0622	−9.4781	.9794
2	B.A.C. 5695		−42	−90	14 25.8	− 7 32 40	−1.0445	.5446	−.0557	−9.4556	.9815
2	29 Ophiuchi		+72	+39	17 12.5	− 4 51 13	+1.1345	.5451	−.0520	−9.5056	.9765
2	B.A.C. 5771	6½	− 3	−62	20 20.2	− 1 49 29	−0.4133	.5459	−.0474	−9.4764	.9796
3	B.A.C. 5839	6½	− 6	−65	1 57.3	+ 3 36 57	−0.4521	.5471	−.0388	−9.4808	.9791
6	β Capricor.	3	− 9	−79	16 23.7	− 8 43 53	−0.6074	.5505	+.0930	−9.4185	.9845
6	B.A.C. 7063	6	+33	−27	20 44.1	− 4 31 51	+0.1401	.5498	+.1001	−9.4268	.9839
7	τ¹ Capricor.	6	+67	0	0 13.0	− 1 9 41	+0.6145	.5494	+.1046	−9.4297	.9837
7	τ² Capricor.	5	+58	− 6	1 8.7	− 0 15 44	+0.5096	.5492	+.1058	−9.4247	.9841
7	8 Aquarii	6	+ 6	−59	11 6.7	+ 9 22 9	−0.3874	.5482	+.1185	−9.3702	.9877
7	9 Aquarii	6	+39	−23	11 41.4	+ 9 56 44	+0.2089	.5482	+.1193	−9.3851	.9868
7	18 Aquarii	6	+77	+22	22 49.9	− 3 16 5	+0.9526	.5468	+.1322	−9.3665	.9879
8	λ Capricor.	5½	+78	+15	9 41.4	+ 7 14 48	+0.8626	.5456	+.1436	−9.3171	.9904
8	B.A.C. 7620	6	+45	−21	13 8.6	+10 35 22	+0.2404	.5453	+.1468	−9.2781	.9920
9	θ Aquarii	4½	− 8	−90	0 28.1	− 2 26 35	−0.7137	.5441	+.1569	−9.1669	.9952
9	B.A.C. 7774	6	+75	+ 1	0 29.2	− 2 25 27	+0.6375	.5441	+.1569	−9.2267	.9937
9	ρ Aquarii	5½	+10	−60	2 6.9	− 0 50 54	−0.4077	.5441	+.1582	−9.1691	.9952
9	67 Aquarii	6	+67	− 5	13 20.8	+10 1 46	+0.5283	.5441	+.1662	−9.1247	.9961
10	B.A.C. 8094	6	+10	−61	5 6.6	+ 1 17 47	−0.4295	.5442	+.1750	−8.8668	.9988
10	B.A.C. 8134	6½	+85	+58	7 54.9	+ 4 0 43	+1.3098	.5445	+.1763	−8.9736	.9981
10	11 Piscium	6½	−27	−90	11 50.9	+ 7 49 16	−1.0373	.5447	+.1777	−8.6437	.9996
10	14 Piscium	6½	−42	−90	14 6.9	+10 0 59	−1.2031	.5450	+.1784	−8.5389	9.9997
11	B.A.C. 8311	6½	−12	−90	0 4.4	− 4 20 35	−0.8291	.5465	+.1811	−8.0422	0.0000
11	B.A.C. 8365	6½	+89	+ 5	5 0.4	+ 0 25 55	+0.7078	.5473	+.1819	−8.3360	9.9999
11	B.A.C. 57	6½	+ 8	−65	11 4.8	+ 6 18 35	−0.4795	.5488	+.1823	+8.2189	.9999
11	44 Piscium	6	+30	−39	14 42.3	+ 9 49 2	−0.0834	.5497	+.1823	+8.3219	.9999
12	73 Piscium	6½	+ 1	−76	9 12.3	+ 3 42 42	−0.6107	.5558	+.1794	+8.9352	.9984
12	77 Pisci. *pr.*	7	+48	−21	9 38.9	+ 4 8 25	+0.2370	.5560	+.1792	+8.8645	.9988
12	*e* Piscium	5½	+ 6	−67	10 50.5	+ 5 17 38	−0.3208	.5564	+.1788	+8.9354	.9984
12	88 Piscium	6½	−41	−84	13 44.2	+ 8 5 37	−1.1937	.5577	+.1778	+9.0397	.9974
12	96 Piscium	6½	+15	−55	20 18.3	− 9 33 33	−0.3583	.5604	+.1749	+9.0609	.9971
12	μ Piscium	4½	+90	+19	20 48.5	− 9 4 22	+0.9139	.5607	+.1745	+8.9780	.9980
12	B.A.C. 481	6½	+25	−43	23 28.8	− 6 29 23	−0.1723	.5619	+.1731	+9.0836	.9968
13	*o* Piscium	4	−25	−82	3 40.7	− 2 26 17	−1.0120	.5642	+.1706	+9.1690	.9952
13	ξ¹ Ceti	4½	+90	+62	15 57.8	+ 9 25 19	+1.3029	.5706	+.1616	+9.1553	.9955
13	B.A.C. 728	6½	+33	−33	20 25.1	−10 16 50	−0.0315	.5731	+.1575	+9.2494	.9930
13	B.A.C. 741	6½	+90	+45	21 0.0	− 9 43 10	+1.1948	.5733	+.1571	+9.1995	.9945
13	ξ Arietis	5½	+53	−14	21 6.5	− 9 36 51	+0.3042	.5733	+.1570	+9.2399	.9934
13	B.A.C. 755	6	+66	− 4	21 57.2	− 8 47 57	+0.4798	.5738	+.1562	+9.2380	.9934
14	31 Arietis	5½	−11	−78	2 10.9	− 4 43 22	−0.8037	.5761	+.1520	+9.3132	.9906
14	B.A.C. 830	6	+90	+65	4 44.4	− 2 15 22	+1.3023	.5778	+.1492	+9.2470	.9931
14	38 Arietis	5	+19	−46	5 46.0	− 1 16 1	−0.2794	.5782	+.1481	+9.3137	.9906
14	B.A.C. 987	6½	+81	+ 7	16 56.0	+ 9 29 31	+0.6359	.5849	+.1345	+9.3367	.9876
15	Wei. III. 1085	8½	+90	+40	14 32.5	+ 6 16 52	+1.0723	.5979	+.1016	+9.4032	.9856
15	B.A.C. 1272	6	−35	−73	16 0.4	+ 7 41 23	−1.0995	.5985	+.0992	+9.4654	.9806
15	Lal. 7671	8	−29	−73	16 16.2	+ 7 56 31	−1.0309	.5987	+.0989	+9.4644	.9808
15	Lal. 7702	9½	−17	−73	16 33.8	+ 8 13 27	−0.8722	.5990	+.0980	+9.4611	.9811
15	Weis. IV. 24	9	+90	+43	17 7.7	+ 8 46 1	+1.1008	.5991	+.0973	+9.4098	.9852
15	Lal. 77553	7½	+60	− 2	17 12.3	+ 8 50 29	+0.3995	.5991	+.0972	+9.4295	.9837
15	B.A.C. 1281	7	+18	−42	17 14.9	+ 8 52 55	−0.2957	0.5991	+.0971	+9.4481	9.9822

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Jan.15	Rumk. 1103	7	+90	+16	17 18.7	+ 8 56 35	+0.7274	0.5991	+.0971	+9.4208	9.9844
15	Rumk. 1110		−17	−73	17 48.9	+ 9 25 46	−0.8734	.5995	+.0960	+9.4642	.9808
15	48 Tauri	6	+90	+45	19 8.7	+10 42 21	+1.1158	.6001	+.0938	+9.4148	.9848
15	Rumk. 1136	6	+56	− 5	19 33.0	+11 5 43	+0.3381	.6005	+.0928	+9.4371	.9831
15	Lal. 8031	9	−46	−73	20 14.6	+11 45 40	−1.1945	.6008	+.0918	+9.4777	.9795
15	γ Tauri	4	+90	+37	20 44.4	−11 45 43	+1.0242	.6010	+.0907	+9.4215	.9843
15	55 Tauri	7	+42	−16	20 46.2	−11 43 57	+0.1337	.6010	+.0907	+9.4455	.9824
15	Rumk. 1161		−16	−73	21 21.8	−11 9 44	−0.8668	.6016	+.0894	+9.4722	.9800
15	Rumk. 1163	8	+29	−29	21 24.9	−11 6 50	−0.0949	.6016	+.0893	+9.4529	.9818
15	δ¹ Tauri	4	−11	−73	21 56.9	−10 36 4	−0.7849	.6016	+.0886	+9.4715	.9801
15	63 Tauri	6	+34	−24	22 9.3	−10 24 8	−0.0068	.6016	+.0884	+9.4524	.9818
15	B.A.C. 1351	6½	+43	−15	22 10.7	−10 22 47	+0.1430	.6016	+.0883	+9.4486	.9821
15	δ² Tauri	6	− 3	−67	22 24.6	−10 9 26	−0.6500	.6020	+.0875	+9.4692	.9803
15	Lal. 8249	7½	+19	−40	22 31.3	−10 2 59	−0.2782	.6021	+.0873	+9.4601	.9811
15	Lal. 8256	8	+30	−28	22 33.8	−10 0 39	−0.0813	.6021	+.0873	+9.4552	.9816
15	δ³ Tauri	5	−34	−73	22 57.1	− 9 38 11	−1.0894	.6021	+.0868	+9.4811	.9791
15	70 Tauri	7	+90	+29	23 2.7	− 9 32 50	+0.8989	.6023	+.0866	+9.4305	.9836
15	Rumk. 1189		+35	−23	23 20.1	− 9 16 7	+0.0123	.6023	+.0862	+9.4445	.9816
15	71 Tauri	6	+90	+61	23 20.2	− 9 16 1	+1.2434	.6023	+.0862	+9.4217	.9843
15	Rumk. 1192		+18	−40	23 22.9	− 9 13 29	−0.2833	.6026	+.0857	+9.4622	.9809
16	Rumk. 1203		+81	+11	0 7.0	− 8 31 6	+0.6239	.6027	+.0846	+9.4403	.9828
16	75 Tauri	6	+75	+ 8	0 9.4	− 8 28 47	+0.5700	.6027	+.0846	+9.4419	.9827
16	θ¹ Tauri	4½	+90	+34	0 12.6	− 8 25 39	+0.9678	.6027	+.0845	+9.4313	.9836
16	θ² Tauri	4½	+90	+41	0 14.9	− 8 23 28	+1.0617	.6027	+.0844	+9.4288	.9838
16	Rumk. 1210		+90	+21	0 22.2	− 8 16 27	+0.7834	.6028	+.0841	+9.4367	.9831
16	Rumk. 1212	6	+ 1	−49	0 28.9	− 8 10 3	−0.5876	.6028	+.0839	+9.4720	.9800
16	Rumk. 1214		−19	−73	0 32.3	− 8 6 45	−0.8991	.6029	+.0838	+9.4797	.9793
16	Rumk. 1215	7	−21	−73	0 32.9	− 8 6 14	−0.9287	.6029	+.0838	+9.4804	.9792
16	B.A.C. 1391	5	+90	+22	0 59.4	− 7 40 43	+0.7965	.6031	+.0830	+9.4377	.9831
16	B.A.C. 1394	7	+90	+25	1 4.8	− 7 35 36	+0.8431	.6031	+.0829	+9.4366	.9831
16	Rumk. 1227	7	+90	+55	1 18.9	− 7 21 59	+1.1973	.6032	+.0823	+9.4276	.9839
16	85 Tauri	6	+90	+52	1 30.6	− 7 10 42	+1.1763	.6033	+.0819	+9.4286	.9838
16	Rumk. 1232		+64	+ 2	1 42.0	− 6 59 49	+0.4464	.6034	+.0815	+9.4484	.9821
16	Rumk. 1233		−12	−73	1 47.7	− 6 54 23	−0.8028	.6034	+.0813	+9.4799	.9793
16	Rumk. 1235		+90	+40	1 43.3	− 6 58 59	+1.0503	.6035	+.0812	+9.4328	.9835
16	B.A.C. 1406	7	+90	+20	2 12.3	− 6 30 42	+0.7575	.6037	+.0804	+9.4414	.9828
16	Rumk. 1238	10	+78	+10	2 31.6	− 6 12 8	+0.5952	.6038	+.0803	+9.4463	.9823
16	Lal. 8599	9	− 2	−65	2 35.4	− 6 8 30	−0.6350	.6039	+.0799	+9.4774	.9795
16	Lal. 8610	8	+42	−16	2 43.1	− 6 1 9	+0.1216	.6039	+.0797	+9.4589	.9812
16	Lal. 8613	8	+30	−27	2 44.3	− 5 59 58	−0.0778	.6040	+.0796	+9.4640	.9808
16	α Tauri	1	+82	+12	3 5.9	− 5 39 18	+0.6311	.6041	+.0789	+9.4466	.9823
16	89 Tauri	7	+90	+52	3 59.2	− 4 48 0	+1.1727	.6046	+.0771	+9.4340	.9833
16	Rumk. 1241		+90	+19	4 39.7	− 4 9 10	+0.7337	.6050	+.0759	+9.4470	.9823
16	Rumk. 1243	8	+90	+20	4 51.8	− 3 57 31	+0.7547	.6051	+.0755	+9.4460	.9823
16	Rumk. 1246	7	+28	−28	5 17.4	− 3 32 54	−0.1088	.6053	+.0747	+9.4696	.9802
16	Rumk. 1247		+78	+11	5 17.8	− 3 32 36	+0.5931	.6053	+.0747	+9.4519	.9818
16	Rumk. 1254		+82	+13	5 32.7	− 3 18 16	+0.6342	.6055	+.0742	+9.4513	.9819
16	Lal. 8852	9½	+36	−20	5 51.1	− 3 0 34	+0.0272	.6056	+.0736	+9.4673	.9805
16	Rumk. 1276		−30	−72	7 27.0	− 1 28 33	−1.0380	.6062	+.0702	+9.4956	.9776
16	B.A.C. 1478	6	−53	−72	8 3.2	− 0 53 47	−1.2337	.6065	+.0690	+9.5011	.9770
16	Rumk. 1283		+90	+26	8 5.6	− 0 51 27	+0.8408	.6065	+.0690	+9.4507	.9820
16	Rumk. 1299	7½	+27	−29	9 18.8	+ 0 18 51	−0.1320	.6070	+.0665	+9.4771	.9795
16	Rumk. 1300		+30	−26	9 21.0	+ 0 20 59	−0.0773	.6070	+.0664	+9.4759	.9797
16	Rumk. 1301	6	−61	−72	9 21.9	+ 0 21 47	−1.2682	.6070	+.0664	+9.5039	.9767
16	Rumk. 1302	7	−45	−72	9 22.4	+ 0 22 18	−1.1800	0.6070	+.0664	+9.5020	9.9769

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Jan.16	B.A.C. 1526	6	+71	+ 8	11 28.6	+ 2 23 29	+0.5237	0.6080	+.0622	+9.4645	9.9808
16	*m* Tauri	5½	−10	−72	15 19.5	+ 6 5 3	−0.7600	.6091	+.0548	+9.5006	.9770
16	111 Tauri	6	+90	+23	21 55.1	−11 35 21	+0.7495	.6116	+.0408	+9.4722	.9800
16	115 Tauri	5½	+47	− 7	22 58.5	−10 34 32	+0.2100	.6118	+.0385	+9.4863	.9786
16	117 Tauri	6	+90	+36	23 19.2	−10 14 36	+0.9352	.6118	+.0380	+9.4690	.9803
17	119 Tauri	5½	+14	−40	0 54.0	− 8 43 43	−0.3605	.6123	+.0344	+9.5013	.9770
17	B.A.C. 1728	6½	+90	+55	0 56.6	− 8 41 12	+1.1623	.6125	+.0343	+9.4648	.9807
17	120 Tauri	6	+18	−36	1 24.3	− 8 14 35	−0.2942	.6125	+.0330	+9.5001	.9771
17	122 Tauri	6	+90	+63	2 47.5	− 6 54 48	+1.2210	.6128	+.0302	+9.4648	.9807
17	130 Tauri	6	+80	+17	6 45.0	− 3 6 57	+0.6109	.6136	+.0216	+9.4823	.9790
17	B.A.C. 1930	6½	+90	+24	12 40.8	+ 2 34 15	+0.7135	.6145	+.0086	+9.4820	.9790
17	71 Orionis	5½	−12	−71	17 11.4	+ 6 53 49	−0.7865	.6147	−.0012	+9.5169	.9761
18	26 Geminor.	5½	+67	+ 9	3 43.9	− 6 59 39	+0.4852	.6146	−.0247	+9.4846	.9788
18	λ Geminor.	3½	+90	+34	17 26.7	+ 6 9 36	+0.9287	.6122	−.0544	+9.4603	.9811
18	B.A.C. 2432	6½	−20	−72	19 20.1	+ 7 58 26	−0.9078	.6118	−.0578	+9.5020	.9769
18	68 Geminor.	5½	+90	+60	23 27.4	+11 55 45	+1.2280	.6104	−.0668	+9.4432	.9826
19	*f* Geminor.	6	−10	−72	1 41.9	− 9 55 10	−0.7741	.6097	−.0712	+9.4893	.9783
19	1 Cancri	6	+69	+ 5	8 34.9	− 3 18 41	+0.5070	.6069	−.0847	+9.4440	.9826
19	3 Cancri	6	−39	−73	10 2.6	− 1 54 26	−1.1361	.6063	−.0873	+9.4821	.9790
19	5 Cancri	6	+17	−42	10 20.5	− 1 37 16	−0.3167	.6060	−.0876	+9.4614	.9810
19	B.A.C. 2731	6½	−47	−73	13 41.4	+ 1 35 40	−1.2034	.6045	−.0941	+9.4757	.9797
19	29 Cancri	6	+90	+19	21 9.1	+ 8 45 53	+0.7889	.6009	−.1071	+9.4029	.9856
20	ξ Leonis	6	+49	−16	23 14.1	+ 9 51 31	+0.2466	.5853	−.1446	+9.3137	.9906
21	ο Leonis	3½	+90	+35	3 9.8	−10 21 22	+1.0752	.5826	−.1493	+9.2603	.9927
21	18 Leonis	6	−44	−78	5 21.9	− 8 14 3	−1.2056	.5808	−.1519	+9.3326	.9897
21	B.A.C. 3345	6	−18	−78	5 52.3	− 7 44 47	−0.8999	.5806	−.1523	+9.3193	.9904
21	B.A.C. 3398	6	+90	+30	9 43.6	− 4 1 49	+1.0219	.5781	−.1562	+9.2202	.9939
21	A Leonis	5	−15	−80	14 41.9	+ 0 45 49	−0.8710	.5749	−.1608	+9.2665	.9925
21	B.A.C. 3538	6½	−15	−81	21 0.8	+ 6 51 21	−0.8698	.5710	−.1658	+9.2234	.9938
21	44 Leonis	6	−18	−81	22 21.0	+ 8 8 48	−0.9164	.5702	−.1668	+9.2156	.9941
21	B.A.C. 3562	6½	−19	−81	22 30.3	+ 8 17 44	−0.9311	.5699	−.1670	+9.2151	.9941
22	48 Leonis	6	+48	−20	2 38.2	−11 42 56	+0.2268	.5673	−.1697	+9.1233	.9961
22	37 Sextantis	6	+31	−36	7 43.5	− 6 48 7	−0.0649	.5640	−.1727	+9.0902	.9967
22	*c* Leonis	5	−22	−83	14 24.8	− 0 20 23	−0.9674	.5600	−.1759	+9.0741	.9969
23	τ Leonis	5	+42	−27	3 3.6	+11 53 13	+0.1251	.5534	−.1797	+8.7962	.9992
23	89 Leonis	6	− 1	−80	6 6.2	− 9 10 6	−0.6425	.5517	−.1802	+8.8209	.9990
23	β Virginis	3½	− 4	−86	13 48.3	− 1 42 55	−0.6926	.5482	−.1808	+8.6417	.9996
23	B.A.C. 4043	6½	+28	−41	17 52.4	+ 2 13 19	−0.1239	.5459	−.1808	+8.3453	9.9999
24	13 Virginis	6	+ 9	−63	3 22.4	+11 25 16	−0.4491	.5424	−.1798	− 6.9328	0.0000
24	η Virginis	3½	− 4	−86	3 58.9	−11 59 24	−0.6860	.5424	−.1798	+7.0945	0.0000
24	38 Virginis	6	+ 5	−68	20 22.5	+ 3 53 42	−0.5172	.5372	−.1750	−8.6935	9.9995
24	*k* Virginis	6	−11	−90	23 34.5	+ 6 59 48	−0.7954	.5364	−.1737	−8.7321	.9994
25	48 Virginis	6	−62	−90	1 41.5	+ 9 2 50	−1.3204	.5357	−.1727	−8.7110	.9994
25	θ Virginis *tr.*	4½	+44	−24	4 41.6	+11 57 29	+0.1823	.5351	−.1714	−8.9252	.9985
25	ρ Virginis	5	−17	−90	15 43.8	− 1 20 30	−0.8821	.5333	−.1653	−8.9669	.9979
25	*m* Virginis	6	+82	+24	20 33.5	+ 3 20 21	+0.9920	.5327	−.1623	−9.1452	.9957
26	94 Virginis	6	− 9	−90	9 0.0	− 8 35 38	−0.7293	.5319	−.1533	−9.1571	.9955
26	95 Virginis	6	+15	−53	9 13.0	− 8 23 5	−0.3032	.5319	−.1532	−9.1786	.9950
26	96 Virginis	6½	+75	+ 1	10 21.1	− 7 16 59	+0.6418	.5319	−.1530	−9.2267	.9937
26	ν Virginis	4½	+49	−18	12 18.9	− 5 22 50	+0.2920	.5317	−.1499	−9.2245	.9938
26	2 Libræ	6	+79	+32	17 36.7	− 0 14 33	+1.0912	.5317	−.1462	−9.2846	.9918
27	ξ^1 Libræ	6	−16	−90	9 13.7	− 9 5 58	−0.8082	.5326	−.1318	−9.2941	.9914
27	o^2 Libræ	6	+76	+30	23 32.9	+ 4 47 14	+1.0512	.5341	−.1164	−9.4032	.9856
28	γ Libræ	4½	+27	−34	5 47.9	+10 50 47	−0.0003	.5348	−.1093	−9.3940	.9862
28	η Libræ	6	+61	− 4	10 3.0	− 9 1 57	+0.5437	0.5355	−.1043	−9.4198	9.9844

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Jan. 28	θ Libræ	4½	+74	+56	14 51.8	— 4 21 59	+1.2621	0.5364	—.0984	—9.4491	9.9821
28	49 Libræ	5½	+74	+ 7	18 8.9	— 1 11 3	+0.7279	.5372	—.0944	—9.4439	.9826
29	φ Ophiuchi	5	+ 4	—57	9 18.2	—10 29 54	—0.3511	.5399	—.0745	—9.4486	.9821
29	24 Scorpii	5	+69	— 2	14 23.0	— 5 34 36	+0.5774	5407	—.0671	—9.4776	.9795
29	B.A.C. 5695	6	—27	—90	21 27.5	+ 1 16 37	—0.8519	5427	—.0571	—9.4556	.9815
30	B.A.C. 5771	6½	+ 7	—49	3 22.8	+ 7 0 42	—0.2318	.5439	—.0485	—9.4764	.9796
30	B.A C. 5839	6½	+ 4	—52	9 0.8	—11 31 56	—0.2805	.5449	—.0403	—9.4808	.9791
31	VENUS		+51	— 4	1 3.9	+ 4 0 26	+0.5310	.5124	—.0125	—9.5071	.9763
31	B.A.C. 6069	6½	+51	— 4	2 19.1	+ 5 13 9	+0.5349	.5481	—.0140	—9.5076	.9763
31	B.A.C. 6267	6	—10	—67	17 38.0	— 3 57 30	—0.4827	.5504	+.0104	—9.4871	.9785
31	B A C. 6287	6	+53	— 3	18 40.6	— 2 56 56	+0.5559	.5505	+.0120	—9.5084	.9762
31	B.A.C. 6292	6	+71	+10	19 13.0	— 2 25 31	+0.7622	.5508	+.0127	—9.5124	.9757
31	B A.C. 6293	6½	+20	—31	19 16.0	— 2 22 36	+0.0578	.5508	+.0127	—9.4981	.9773
31	B.A.C. 6294	6	+29	—22	19 16.7	— 2 21 56	+0.2129	.5508	+.0127	—9.5012	.9770
Feb. 1	ρ¹ Sagittarii	4	+54	— 4	19 7.0	— 3 18 1	+0.5326	.5528	+.0505	—9.4921	.9780
1	ρ² Sagittarii	5½	+72	+30	19 10.8	— 3 14 21	+1.0373	.5528	+.0505	—9.5026	.9768
1	B.A.C 6658	6	+72	+64	22 8.3	— 0 22 40	+1.2732	.5530	+.0551	—9.5043	.9767
2	e¹ Sagittarii	6	—11	—77	4 9.7	+ 5 27 1	—0.5891	.5532	+.0640	—9.4557	.9815
2	e² Sagittarii	5	—18	—90	5 1.0	+ 6 16 38	—0.7110	.5532	+.0657	—9.4515	.9819
2	g Sagittarii	5½	—24	—90	12 20.2	—10 38 26	—0.8323	.5532	+.0766	—9.4361	.9832
5	ρ Aquarii	5½	+ 3	—69	8 11.0	+ 7 0 39	—0.5168	.5501	+.1579	—9.1691	.9952
5	67 Aquarii	6	+57	—13	19 14.0	— 6 17 33	+0.3952	.5495	+.1663	—9.1247	.9961
6	B A C. 8094	6	+ 1	—74	10 45.5	+ 8 44 2	—0.5848	.5495	+.1753	—8.8669	.9988
6	B.A.C. 8134	6½	+85	+36	13 31.4	+11 24 35	+1.1458	.5498	+.1766	—8.9736	.9981
6	11 Piscium	6½	—42	—90	18 24.2	— 7 49 57	—1.1965	.5498	+.1784	—8.6437	9.9996
7	B.A.C. 8311	6½	—25	—90	5 29.0	+ 2 51 20	—1.0058	.5508	+.1813	—8.0425	0.0000
7	B A.C. 8365	6½	+69	— 6	10 22.0	+ 7 34 55	+0.5220	.5514	+.1821	—8.3362	9.9999
7	B.A.C. 57	6½	— 3	—84	16 23.4	—10 35 30	—0.6697	.5523	+.1825	+8.2186	.9999
7	44 Piscium	6	+19	—51	19 59.5	— 7 6 26	—0.2772	.5528	+.1824	+8.3217	.9999
8	73 Piscium	6½	—12	—85	14 26.3	+10 44 2	—0.8188	.5569	+.1789	+9.0351	.9984
8	77 Pisci. *pr.*	7	+36	—32	14 52.9	+11 9 45	+0.0303	.5569	+.1788	+8.8645	.9988
8	ε Piscium	5½	+ 5	—68	16 4.6	—11 40 58	—0.5293	.5572	+.1784	+8.9354	.9984
9	96 Piscium	6½	+ 3	—71	1 34.2	— 2 30 21	—0.5712	.5600	+.1742	+9.0609	.9971
9	μ Piscium	4½	+89	+ 6	2 4.6	— 2 0 59	+0.7057	.5603	+.1740	+8.9779	.9980
9	B.A.C. 481	6½	+13	—57	4 45.8	+ 0 34 49	—0.3856	.5610	+.1725	+9.0836	.9968
9	o Piscium	4	—46	—82	8 59.5	+ 4 39 57	—1.2311	.5625	+.1609	+9.1690	.9952
9	64 Ceti	6½	+90	+54	20 41.5	— 8 2 8	+1.2644	.5655	+.1626	+9.1406	.9958
9	ξ¹ Ceti	4½	+90	+35	21 24.9	— 7 20 15	+1.0982	.5673	+.1605	+9.1553	.9955
10	B A.C. 728	6½	+21	—45	1 56.1	— 2 58 27	—0.2452	.5696	+.1558	+9.2494	.9930
10	B.A.C. 741	6½	+90	+27	2 30.5	— 2 25 14	+0.9913	.5691	+.1559	+9.1995	.9945
10	ξ Arietis	5½	+49	—26	2 38.2	— 2 17 49	+0.0935	.5692	+.1558	+9.2399	.9934
10	B.A.C. 755	6	+51	—16	3 29.7	— 1 28 7	+0.2708	.5696	+.1550	+9.2380	.9934
10	31 Arietis	5½	—27	—78	7 47.8	+ 2 40 56	—1.0231	.5715	+.1510	+9.3132	.9906
10	B.A.C. 830	6	+90	+37	10 24.3	+ 5 11 52	+1.1036	.5727	+.1480	+9.2469	.9931
10	38 Arietis	5	+ 7	—61	11 27.1	+ 6 12 28	—0.4928	.5732	+.1468	+9.3137	.9906
10	B.A.C. 987	6½	+63	— 4	22 51.9	— 6 47 9	+0.4379	.5782	+.1333	+9.3367	.9895
11	Wei.III.1085	8½	+90	+27	21 5.0	— 9 23 4	+0.8993	.5882	+.1010	+9.4032	.9856
11	Lal. 7671	8	—51	—73	22 52.0	— 7 40 7	—1.2325	.5891	+.0979	+9.4644	.9808
11	Lal. 7677	8	—50	—73	22 56.4	— 7 35 52	—1.2241	.5892	+.0978	+9.4644	.9808
11	Lal. 7702	9½	—32	—73	23 10.2	— 7 22 36	—1.0713	.5892	+.0976	+9.4611	.9811
11	Weis. IV. 24	9	+90	+30	23 45.2	— 6 48 55	+0.9311	.5894	+.0964	+9.4098	.9852
11	Lal. 7753	7½	+48	—12	23 50.0	— 6 44 19	+0.2195	.5894	+.0963	+9.4295	.9837
11	B.A.C. 1281	7	+ 7	—55	23 52.6	— 6 41 48	—0.4857	.5894	+.0962	+9.4481	.9822
11	Rumk. 1103	7	+73	+ 6	23 56.5	— 6 38 2	+0.5526	0.5895	+.0961	+9.4207	9.9844

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Feb. 12	Rumk. 1110		−32	−73	0 27.7	− 6 8 0	−1.0715	0.5898	+.0951	+9.4642	9.9808
12	48 Tauri	6	+90	+31	1 50.2	− 4 48 38	+0.9482	.5903	+.0929	+9.4148	.9848
12	Rumk. 1136	6	+44	−15	2 15.3	− 4 24 28	+0.1597	.5906	+.0924	+9.4371	.9831
12	γ Tauri	4	+90	+25	3 29.0	− 3 13 33	+0.8572	.5911	+.0900	+9.4214	.9843
12	55 Tauri	7	+32	−26	3 30.9	− 3 11 43	−0.0466	.5912	+.0899	+9.4455	.9824
12	Rumk. 1161		−32	−73	4 7.7	− 2 36 22	−1.0617	.5913	+.0892	+9.4722	.9800
12	Rumk. 1163	8	+19	−40	4 10.9	− 2 33 16	−0.2780	.5913	+.0891	+9.4529	.9818
12	δ¹ Tauri	4	−25	−73	4 43.9	− 2 1 29	−0.9779	.5916	+.0879	+9.4715	.9801
12	63 Tauri	6	+24	−34	4 56.8	− 1 49 7	−0.1876	.5916	+.0877	+9.4524	.9818
12	B.A.C. 1351	6½	+32	−25	4 58.2	− 1 47 42	−0.0356	.5916	+.0876	+9.4486	.9821
12	δ² Tauri	6	−14	−73	5 13.0	− 1 33 26	−0.8396	.5917	+.0873	+9.4672	.9803
12	Lal. 8249	7½	+ 8	−52	5 19.5	− 1 27 14	−0.4630	.5917	+.0871	+9.4601	.9811
12	Lal. 8256	8	+19	−39	5 22.0	− 1 24 49	−0.2628	.5918	+.0865	+9.4552	.9816
12	δ³ Tauri	5	−69	−73	5 46.2	− 1 1 35	−1.2856	.5918	+.0861	+9.4810	.9791
12	70 Tauri	7	+90	+18	5 52.0	− 0 56 0	+0.7328	.5918	+.0860	+9.4305	.9836
12	Lal. 8311	8	+90	+51	6 3.8	− 0 44 36	+1.1676	.5920	+.0857	+9.4191	.9845
12	Rumk. 1188	6½	+90	+51	6 4.0	− 0 44 25	+1.1690	.5920	+.0857	+9.4191	.9845
12	Rumk. 1189		+25	−33	6 9.9	− 0 38 42	−0.1671	.5921	+.0856	+9.4545	.9816
12	71 Tauri	6	+90	+43	6 10.1	− 0 38 35	+1.0827	.5921	+.0856	+9.4217	.9843
12	Rumk. 1192		+ 8	−52	6 12.8	− 0 35 58	−0.4673	.5921	+.0855	+9.4622	.9809
12	Rumk. 1196	6	+90	+39	6 28.5	− 0 20 51	+1.0359	.5922	+.0847	+9.4191	.9845
12	Rumk. 1200		+90	+49	6 40.7	− 0 9 6	+1.1511	.5922	+.0845	+9.4210	.9844
12	Rumk. 1203		+64	+ 2	6 58.4	+ 0 7 56	+0.4547	.5922	+.0841	+9.4403	.9828
12	75 Tauri	6	+60	− 1	7 0.9	+ 0 10 21	+0.3998	.5922	+.0840	+9.4419	.9827
12	θ¹ Tauri	4½	+90	+22	7 4.3	+ 0 13 34	+0.8041	.5922	+.0839	+9.4313	.9836
12	θ² Tauri	4½	+90	+29	7 6.6	+ 0 15 49	+0.8995	.5922	+.0839	+9.4288	.9838
12	Rumk. 1210		+80	+11	7 14.2	+ 0 23 6	+0.6170	.5923	+.0837	+9.4366	.9831
12	Rumk. 1212	6	−10	−73	7 21.1	+ 0 29 43	−0.7750	.5923	+.0835	+9.4720	.9800
12	Rumk. 1214		−34	−73	7 24.6	+ 0 33 8	−1.0912	.5923	+.0834	+9.4797	.9793
12	Rumk. 1215	7	−37	−73	7 25.1	+ 0 33 39	−1.1212	.5924	+.0833	+9.4804	.9792
12	80 Tauri	6	+90	+53	7 43.2	+ 0 50 58	+1.1811	.5924	+.0828	+9.4226	.9842
12	B.A.C. 1391	5	+82	+12	7 52.6	+ 1 0 4	+0.6308	.5925	+.0826	+9.4377	.9831
12	81 Tauri	5½	+90	+48	7 55.5	+ 1 2 51	+1.1418	.5925	+.0825	+9.4241	.9841
12	B.A.C. 1394	7	+89	+15	7 58.2	+ 1 5 25	+0.6786	.5925	+.0824	+9.4366	.9831
12	Rumk. 1227	7	+90	+39	8 12.8	+ 1 19 30	+1.0382	.5926	+.0820	+9.4276	.9839
12	85 Tauri	6	+90	+38	8 25.0	+ 1 31 11	+1.0172	.5928	+.0815	+9.4286	.9838
12	Rumk. 1232		+51	− 8	8 36.7	+ 1 42 28	+0.2762	.5930	+.0811	+9.4484	.9821
12	Rumk. 1233		−26	−73	8 42.5	+ 1 48 4	−0.9922	.5931	+.0809	+9.4799	.9793
12	Rumk. 1235		+90	+28	8 48.4	+ 1 53 42	+0.8898	.5932	+.0808	+9.4328	.9835
12	B.A.C. 1406	7	+77	+10	9 8.1	+ 2 12 39	+0.5928	.5932	+.0802	+9.4414	.9828
12	Rumk. 1238	10	+62	+ 1	9 28.0	+ 2 31 52	+0.4285	.5935	+.0798	+9.4463	.9823
12	Lal. 8599	9	−14	−73	9 32.0	+ 2 35 38	−0.8207	.5935	+.0795	+9.4774	.9795
12	Lal. 8610	8	+31	−26	9 39.9	+ 2 43 16	−0.0522	.5936	+.0793	+9.4589	.9812
12	Lal. 8613	8	+20	−38	9 41.2	+ 2 44 28	−0.2549	.5936	+.0793	+9.4640	.9808
12	α Tauri	1	+65	+ 3	10 3.5	+ 3 5 55	+0.4654	.5936	+.0785	+9.4466	.9823
12	89 Tauri	7	+90	+38	10 58.7	+ 3 59 1	+1.0167	.5940	+.0769	+9.4340	.9833
12	σ¹ Tauri	5½	+90	+70	11 23.4	+ 4 22 50	+1.2803	.5944	+.0762	+9.4278	.9838
12	σ² Tauri	5½	+90	+51	11 26.0	+ 4 25 21	+1.1655	.5944	+.0761	+9.4310	.9836
12	Rumk. 1241		+75	+ 9	11 40.5	+ 4 39 17	+0.5713	.5942	+.0756	+9.4470	.9823
12	Rumk. 1243	8	+77	+11	11 53.1	+ 4 51 21	+0.5931	.5943	+.0752	+9.4469	.9823
12	Rumk. 1246	7	+18	−39	12 19.6	+ 5 16 51	−0.2834	.5943	+.0746	+9.4696	.9802
12	Rumk. 1247		+62	+ 1	12 19.9	+ 5 17 10	+0.4293	.5943	+.0746	+9.4519	.9818
12	Rumk. 1254		+66	+ 4	12 35.4	+ 5 32 3	+0.4714	.5947	+.0738	+9.4513	.9819
12	Rumk. 1255		+90	+55	12 36.6	+ 5 33 10	+1.1907	.5947	+.0738	+9.4326	.9835
12	Lal. 8852	9½	+26	−30	12 54.5	+ 5 50 22	−0.1446	0.5947	+.0734	+9.4673	9.9805

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Feb. 12	Rumk. 1263	9½	+90	+52	13 31.5	+ 6 26 0	+1.1612	0.5950	+.0720	+9.4352	9.9833
12	Rumk. 1276		−51	−72	14 33.7	+ 7 25 49	−1.2246	.5952	+.0701	+9.4956	.9776
12	Rumk. 1283	7	+90	+17	15 13.7	+ 8 4 16	+0.6844	.5953	+.0692	+9.4507	.9820
12	Rumk. 1294		+90	+53	16 5.8	+ 8 54 21	+1.1679	.5959	+.0675	+9.4397	.9829
12	Rumk. 1299	7½	+17	−39	16 29.5	+ 9 17 14	−0.3021	.5959	+.0665	+9.4771	.9795
12	Rumk. 1300		+20	−36	16 31.8	+ 9 19 25	−0.2464	.5961	+.0664	+9.4759	.9797
12	B.A.C. 1526	6	+58	− 1	18 44.0	+11 26 30	+0.3668	.5968	+.0623	+9.4645	.9808
13	*m* Tauri	5½	−21	−72	22 43.2	− 8 43 36	−0.9326	.5980	+.0547	+9.5006	.9770
13	111 Tauri	6	+80	+15	5 33.3	− 2 9 27	+0.6111	.5999	+.0411	+9.4722	.9800
13	115 Tauri	5½	+38	−15	6 39.0	− 1 6 19	+0.0636	.6003	+.0389	+9.4863	.9786
13	117 Tauri	6	+90	+26	7 0.5	− 0 45 38	+0.8013	.6005	+.0384	+9.4690	.9803
13	119 Tauri	5½	+ 5	−51	8 38.7	+ 0 48 45	−0.5136	.6008	+.0349	+9.5012	.9770
13	B.A.C. 1728	6½	+90	+44	8 41.4	+ 0 51 21	+1.0344	.6008	+.0348	+9.4648	.9807
13	120 Tauri	6	+ 9	−46	9 10.2	+ 1 18 59	−0.4453	.6009	+.0341	+9.5001	.9771
13	122 Tauri	6	+90	+49	10 36.4	+ 2 41 52	+1.0965	.6012	+.0309	+9.4648	.9807
13	130 Tauri	6	+67	+ 9	14 42.7	+ 6 38 29	+0.4821	.6020	+.0226	+9.4823	.9790
14	B.A.C. 1930	6½	+78	+17	20 51.5	−11 27 15	+0.5950	.6031	+.0099	+9.4820	.9790
14	71 Orionis	5½	−21	−71	1 31.9	− 6 57 53	−0.9224	.6034	.0000	+9.5169	.9751
14	26 Geminor.	5½	+59	+ 4	12 26.6	+ 3 30 55	+0.3863	.6038	−.0228	+9.4846	.9788
15	λ Geminor.	3½	+90	+29	2 36.1	− 6 52 58	+0.8594	.6027	−.0517	+9.4603	.9811
15	B.A.C. 2432	6½	−27	−72	4 33.0	− 5 0 44	+1.0005	.6026	−.0556	+9.5020	.9769
15	63 Geminor.	5½	+90	+54	8 47.5	− 0 56 7	+1.1727	.6020	−.0639	+9.4432	.9826
15	*f* Geminor.	6	−16	−72	11 5.8	+ 1 16 47	−0.8531	.6016	−.0682	+9.4893	.9783
15	1 Cancri	6	+65	+ 2	18 9.8	+ 8 4 16	+0.4578	.5999	−.0797	+9.4440	.9826
15	3 Cancri	6	−47	−73	19 39.8	+ 9 30 46	−1.2028	.5987	−.0845	+9.4821	.9790
15	5 Cancri	6	+13	−46	19 58.1	+ 9 48 20	−0.3731	.5986	−.0850	+9.4614	.9810
15	B.A.C. 2731	6½	−61	−73	23 23.8	−10 53 51	−1.2723	.5975	−.0914	+9.4757	.9797
16	29 Cancri	6	+90	+18	7 1.4	− 3 33 47	+0.7637	.5948	−.1043	+9.4028	.9856
17	ξ Leonis	6	+50	−15	9 28.9	− 2 5 30	+0.2627	.5832	−.1428	+9.3137	.9906
17	ο Leonis	3½	+90	+38	13 26.5	+ 1 43 26	+1.1018	.5810	−.1474	+9.2603	.9927
17	18 Leonis	6	−42	−78	15 39.4	+ 3 51 34	−1.1847	.5801	−.1499	+9.3325	.9897
17	B A.C. 3345	6	−16	−78	16 10.0	+ 4 21 1	−0.8768	.5801	−.1503	+9.3193	.9904
17	B.A.C. 3398	6	+90	+33	20 2.3	+ 8 5 1	+1.0588	.5780	−.1544	+9.2202	.9939
18	A Leonis	5	−13	−80	1 1.4	−11 6 31	−0.8310	.5756	−.1592	+9.2665	.9925
18	B.A.C. 3538	6½	−12	−81	7 20.3	− 5 0 57	−0.8179	.5724	−.1645	+9.2234	.9938
18	44 Leonis	6	−15	−81	8 40.5	− 3 43 36	−0.8620	.5715	−.1657	+9.2156	.9941
18	B.A.C. 3562	6½	−16	−81	8 49.7	− 3 34 43	−0.8762	.5714	−.1658	+9.2151	.9941
18	48 Leonis	6	+52	−16	12 57.0	+ 0 23 58	+0.2895	.5695	−.1688	+9.1233	.9961
18	37 Sextantis	6	+35	−32	18 0.9	+ 5 17 25	+0.0060	.5670	−.1720	+9.0902	.9967
19	*c* Leonis	5	−16	−83	0 39.5	+11 42 26	−0.8843	.5636	−.1755	+9.0741	.9969
19	τ Leonis	5	+48	−21	13 10.6	− 0 11 37	+0.2249	.5582	−.1799	+8.7961	.9992
19	89 Leonis	6	+ 5	−69	16 10.9	+ 2 42 44	−0.5357	.5571	−.1805	+8.8208	.9990
19	β Virginis	3½	+ 3	−73	23 46.6	+10 3 26	−0.5749	.5536	−.1815	+8.6415	.9996
20	B.A.C. 4043	6½	+34	−34	3 46.9	−10 4 5	−0.0037	.5522	−.1816	+8.3449	9.9999
20	13 Virginis	6	+17	−53	13 7.3	− 1 1 47	−0.3158	.5489	−.1809	−7.9418	0.0000
20	η Virginis	3½	+ 4	−71	13 43.1	− 0 27 6	−0.5504	.5487	−.1808	+8.0882	0.0000
21	38 Virginis	6	+14	−57	5 48.2	− 8 52 37	−0.3663	.5439	−.1764	−8.6937	9.9995
21	*k* Virginis	6	− 1	−80	8 56.4	− 5 50 19	−0.6396	.5431	−.1752	−8.7322	.9994
21	46 Virginis	6½	−41	−90	9 24.1	− 5 23 34	−1.1893	.5430	−.1749	−8.6655	.9995
21	48 Virginis	6	−38	−90	10 0.9	− 4 49 48	−1.1588	.5426	−.1743	−8.7112	.9994
21	θ Virginis *tr.*	4½	+54	−16	13 57.5	− 0 58 44	+0.3346	.5421	−.1729	−8.9253	.9985
21	66 Virginis	6	−54	−90	21 6.9	+ 5 57 21	−1.2791	.5415	−.1694	−8.8916	.9987
22	l^2 Virginis	5	− 7	−90	0 46.4	+ 9 30 2	−0.7142	.5400	−.1668	−8.9870	.9979
22	*m* Virginis	6	+82	+37	5 30.4	− 9 54 49	+1.1479	.5394	−.1638	−9.1453	.9957
22	94 Virginis	6	+ 1	−72	17 42.7	+ 1 54 54	−0.5551	0.5380	−.1547	−9.1571	9.9955

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p′	q′	Log sin D	Log cos D
			°	°	h m	h m s					
Feb. 22	95 Virginis	6	+24	−42	17 55.4	+ 2 7 13	−0.1322	0.5380	−.1546	−9.1786	9.9950
22	96 Virginis	6½	+81	+11	19 2.3	+ 3 12 4	+0.8059	.5379	−.1537	−9.2268	.9937
22	κ Virginis	4½	+60	− 9	20 57.9	+ 5 4 5	+0.4589	.5377	−.1521	−9.2245	.9938
23	2 Libræ	6	+79	+50	2 10.2	+10 6 46	+1.2543	.5374	−.1477	−9.2847	.9918
23	ξ¹ Libræ	6	− 6	−80	17 32.3	+ 1 0 27	−0.6301	.5369	−.1327	−9.2942	.9914
24	o² Libræ	6	+76	+47	7 40.6	− 9 17 21	+1.2165	.5374	−.1173	−9.4032	.9856
24	γ Libræ	4½	+37	−25	13 51.7	− 2 17 44	+0.1698	.5378	−.1101	−9.3940	.9862
24	η Libræ	6	+75	+ 6	18 4.4	+ 0 47 8	+0.7101	.5381	−.1050	−9.4199	.9844
25	49 Libræ	5½	+74	+18	2 6.5	+ 8 34 18	+0.8913	.5389	−.0950	−9.4439	.9826
25	φ Ophiuchi	5	+12	−46	17 11.4	− 0 48 58	−0.1901	.5406	−.0749	−9.4466	.9821
25	24 Scorpii	5	+72	+ 8	22 15.4	+ 4 5 34	+0.7332	.5411	−.0679	−9.4776	.9795
26	B.A.C. 5695	6	−18	−90	5 19.4	+10 56 13	−0.6968	.5421	−.0579	−9.4556	.9815
26	B.A.C. 5771	6½	+16	−39	11 14.7	− 7 19 39	−0.0817	.5429	−.0493	−9.4764	.9796
26	B.A.C. 5839	6½	+12	−42	16 53.2	− 1 51 54	−0.1341	.5436	−.0408	−9.4808	.9791
27	B.A.C. 6060	6½	+64	+ 4	10 14.5	− 9 3 42	+0.6679	.5460	−.0146	−9.5076	.9763
27	6 Sagittarii	6	−57	−90	12 55.0	− 6 28 18	−1.1633	.5464	−.0104	−9.4695	.9802
28	B.A.C. 6267	6	− 4	−58	1 37.7	+ 5 49 59	−0.3622	.5478	+.0095	−9.4871	.9785
28	B.A.C. 6287	6	+65	+ 5	2 40.6	+ 6 50 53	+0.6751	.5479	+.0111	−9.5084	.9762
28	B.A.C. 6292	6	+71	+18	3 13.3	+ 7 22 28	+0.8808	.5479	+.0117	−9.5124	.9757
28	B.A.C. 6293	6½	+27	−24	3 16.3	+ 7 25 24	+0.1766	.5479	+.0118	−9.4981	.9773
28	B.A.C. 6294	6	+36	−15	3 17.0	+ 7 26 5	+0.3317	.5479	+.0118	−9.5012	.9770
Mar. 1	ρ¹ Sagittarii	4	+63	+ 2	3 14.7	+ 6 37 25	+0.6288	.5503	+.0492	−9.4921	.9780
1	ρ² Sagittarii	5½	+72	+39	3 18.5	+ 6 41 5	+1.1332	.5503	+.0493	−9.5026	.9768
1	e¹ Sagittarii	6	− 6	−68	12 19.7	− 8 35 12	−0.5012	.5509	+.0630	−9.4557	.9815
1	e² Sagittarii	5	−13	−81	13 11.2	− 7 45 23	−0.6240	.5509	+.0644	−9.4515	.9819
1	g Sagittarii	5½	−19	−90	20 31.9	− 0 39 2	−0.7525	.5513	+.0756	−9.4361	.9832
2	B.A.C. 6992	6½	− 6	−72	7 22.3	+ 9 50 17	−0.5415	.5519	+.0913	−9.4186	.9845
2	β Capricor.	3	− 5	−71	7 28.9	+ 9 56 42	−0.5351	.5520	+.0915	−9.4185	.9845
2	B.A.C. 7063	6	+36	−23	11 46.8	− 9 53 46	+0.1946	.5520	+.0974	−9.4268	.9839
2	τ¹ Capricor.	6	+70	+ 3	15 13.3	− 6 34 0	+0.6545	.5521	+.1020	−9.4297	.9837
2	τ² Capricor.	5	+61	− 3	16 8.4	− 5 40 41	+0.5474	.5521	+.1033	−9.4246	.9841
3	8 Aquarii	6	+ 7	−58	1 58.0	+ 3 49 44	−0.3738	.5525	+.1164	−9.3702	.9877
3	9 Aquarii	6	+39	−22	2 32.1	+ 4 22 45	+0.2118	.5526	+.1172	−9.3851	.9868
3	18 Aquarii	6	+77	+19	13 28.2	− 9 2 28	+0.9185	.5527	+.1307	−9.3665	.9879
4	λ Capricor.	5½	+78	+11	0 5.2	+ 1 13 49	+0.7960	.5531	+.1424	−9.3171	.9904
7	44 Piscium	6	+17	−54	2 45.8	+ 1 27 31	−0.3227	.5601	+.1841	+8.3216	.9999
7	73 Piscium	6½	−15	−85	20 48.0	− 5 6 44	−0.8714	.5640	+.1807	+8.9351	.9984
7	77 Pisci. *pr.*	7	+33	−35	21 14.1	− 4 41 36	−0.0303	.5642	+.1806	+8.8645	.9988
7	e Piscium	5½	+ 2	−73	22 21.2	− 3 33 53	−0.5855	.5645	+.1801	+8.9354	.9984
8	96 Piscium	6½	− 1	−77	7 41.8	+ 5 24 39	−0.6323	.5671	+.1759	+9.0608	.9971
8	μ Piscium	4½	+80	+ 2	8 11.5	+ 5 53 22	+0.6336	.5673	+.1757	+8.9779	.9980
8	B.A.C. 481	6½	+10	−61	10 49.4	+ 8 25 51	−0.4498	.5679	+.1741	+9.0835	.9968
8	o Piscium	4	−55	−82	14 58.2	−11 34 1	−1.2903	.5692	+.1715	+9.1690	.9952
9	64 Ceti	6½	+90	+43	2 27.4	− 0 28 53	+1.1830	.5728	+.1624	+9.1406	.9958
9	ξ¹ Ceti	4½	+90	+29	3 10.0	+ 0 12 17	+1.0177	.5732	+.1620	+9.1552	.9955
9	B.A.C. 728	6½	+17	−50	7 36.9	+ 4 29 44	−0.3185	.5748	+.1577	+9.2494	.9930
9	B.A.C. 741	6½	+90	+21	8 10.7	+ 5 2 22	+0.9105	.5748	+.1573	+9.1995	.9945
9	ξ Arietis	5½	+35	−30	8 18.3	+ 5 9 42	+0.1979	.5748	+.1572	+9.2399	.9934
9	B.A.C. 755	6	+46	−20	9 9.1	+ 5 58 38	+0.1940	.5748	+.1563	+9.2380	.9934
9	31 Arietis	5½	−33	−78	13 23.4	+10 3 55	−1.0940	.5766	+.1517	+9.3131	.9906
9	B.A.C. 830	6	+90	+31	15 57.8	−11 27 14	+1.0214	.5774	+.1491	+9.2469	.9931
9	38 Arietis	5	+ 3	−67	16 59.8	−10 27 29	−0.5675	.5778	+.1479	+9.3137	.9906
10	B.A.C. 987	6½	+57	− 9	4 17.4	+ 0 25 41	+0.3585	.5816	+.1342	+9.3367	.9895
11	Wei III.1085	8½	+90	+22	2 24.7	− 2 16 6	+0.8211	.5888	+.1008	+9.4032	.9856
11	Lal. 7702	9½	−40	−73	4 29.9	− 0 15 35	−1.1503	0.5892	+.0973	+9.4611	9.9811

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Mar. 11	Weis. IV. 24	9	+90	+24	5 4.9	+ 0 18 8	+0.8537	0.5894	+.0966	+9.4097	9.9852
11	Lal. 7753	7½	+43	−17	5 9.7	+ 0 22 45	+0.1415	.5894	+.0965	+9.4295	.9837
11	B.A.C. 1281	7	+ 2	−61	5 12.3	+ 0 25 15	−0.5645	.5894	+.0964	+9.4481	.9822
11	Rumk. 1103	7	+66	+ 2	5 16.3	+ 0 29 3	+0.4747	.5894	+.0964	+9.4207	.9844
11	Rumk. 1108	9	+90	+56	5 42.6	+ 0 54 27	+1.2153	.5897	+.0954	+9.4011	.9858
11	Rumk. 1110		−40	−73	5 47.5	+ 0 59 6	−1.1505	.5897	+.0953	+9.4642	.9808
11	48 Tauri	6	+90	+26	7 10.1	+ 2 18 36	+0.8714	.5901	+.0931	+9.4148	.9848
11	Rumk. 1136	6	+39	−19	7 35.3	+ 2 42 50	+0.0620	.5902	+.0921	+9.4371	.9831
11	γ Tauri	4	+90	+20	8 49.2	+ 3 53 57	+0.7809	.5905	+.0901	+9.4214	.9843
11	55 Tauri	7	+27	−31	8 51.1	+ 3 55 48	−0.1244	.5906	+.0901	+9.4455	.9824
11	Rumk. 1161		−39	−73	9 28.0	+ 4 31 18	−1.1410	.5906	+.0888	+9.4722	.9800
11	Rumk. 1163	8	+14	−45	9 31.2	+ 4 34 22	−0.3561	.5907	+.0888	+9.4529	.9818
11	δ¹ Tauri	4	−31	−73	10 4.3	+ 5 6 15	−1.0571	.5907	+.0881	+9.4715	.9801
11	63 Tauri	6	+19	−39	10 17.2	+ 5 18 40	−0.2655	.5907	+.0878	+9.4524	.9918
11	B.A.C. 1351	6½	+28	−30	10 18.7	+ 5 20 6	−0.1133	.5907	+.0877	+9.4485	.9821
11	δ² Tauri	6	−20	−73	10 33.1	+ 5 33 55	−0.9192	.5909	+.0870	+9.4691	.9803
11	Lal. 8249	7½	+ 4	−58	10 40.0	+ 5 40 39	−0.5411	.5909	+.0868	+9.4601	.9811
11	Lal. 8256	8	+15	−44	10 42.6	+ 5 43 5	−0.3407	.5909	+.0868	+9.4552	.9816
11	70 Tauri	7	+85	+13	11 12.6	+ 6 12 0	+0.6566	.5909	+.0861	+9.4305	.9836
11	Lal. 8311	8	+90	+44	11 24.5	+ 6 23 26	+1.0924	.5911	+.0854	+9.4191	.9845
11	Rumk. 1188	6½	+90	+44	11 24.7	+ 6 23 36	+1.0937	.5911	+.0854	+9.4191	.9845
11	Rumk. 1189		+20	−38	11 30.7	+ 6 29 22	−0.2448	.5911	+.0853	+9.4545	.9816
11	71 Tauri	6	+90	+36	11 30.8	+ 6 29 28	+1.0074	.5911	+.0853	+9.4217	.9843
11	Rumk. 1192		+ 3	−58	11 33.5	+ 6 32 6	−0.5455	.5912	+.0852	+9.4621	.9809
11	Rumk. 1198	6	+90	+47	11 49.3	+ 6 47 18	+1.1295	.5912	+.0849	+9.4191	.9845
11	Rumk. 1200		+90	+42	12 1.5	+ 6 59 4	+1.0760	.5912	+.0846	+9.4210	.9844
11	Rumk. 1203		+58	− 2	12 19.4	+ 7 16 12	+0.3784	.5912	+.0842	+9.4403	.9828
11	75 Tauri	6	+55	− 5	12 21.8	+ 7 18 35	+0.3233	.5912	+.0842	+9.4419	.9827
11	θ¹ Tauri	4½	+90	+18	12 25.2	+ 7 21 50	+0.7284	.5913	+.0837	+9.4313	.9836
11	θ² Tauri	4½	+90	+24	12 27.6	+ 7 24 6	+0.8243	.5913	+.0836	+9.4288	.9838
11	Rumk. 1210		+72	+ 7	12 35.2	+ 7 31 26	+0.5414	.5914	+.0834	+9.4366	.9831
11	Rumk. 1210	6	−16	−73	12 42.1	+ 7 38 4	−0.8539	.5914	+.0833	+9.4720	.9800
11	Rumk. 1214		−43	−73	12 45.6	+ 7 41 29	−1.1706	.5914	+.0832	+9.4797	.9793
11	Rumk. 1215	7	−47	−73	12 46.2	+ 7 42 1	−1.2009	.5914	+.0832	+9.4804	.9792
11	80 Tauri *pr.*	6	+90	+45	13 4.3	+ 7 59 26	+1.1069	.5915	+.0828	+9.4226	.9842
11	B.A.C. 1391	5	+73	+ 8	13 13.8	+ 8 8 36	+0.5553	.5915	+.0826	+9.4377	.9831
11	81 Tauri	5½	+90	+41	13 16.7	+ 8 11 26	+1.0676	.5915	+.0825	+9.4241	.9841
11	B.A.C. 1394	7	+78	+10	13 19.4	+ 8 13 56	+0.6030	.5916	+.0824	+9.4366	.9831
11	Rumk. 1227	7	+90	+34	13 34.1	+ 8 28 6	+0.9640	.5917	+.0817	+9.4276	.9839
11	85 Tauri	6	+90	+32	13 46.3	+ 8 39 50	+0.9428	.5917	+.0814	+9.4286	.9838
11	Rumk. 1232		+46	−13	13 58.1	+ 8 51 12	+0.2000	.5917	+.0811	+9.4484	.9821
11	Rumk. 1233		−33	−73	14 3.9	+ 8 56 49	−1.0715	.5917	+.0810	+9.4798	.9793
11	Rumk. 1235		+90	+23	14 9.8	+ 9 2 30	+0.8149	.5918	+.0807	+9.4328	.9835
11	B.A.C. 1406	7	+70	+ 6	14 29.6	+ 9 21 31	+0.5175	.5919	+.0800	+9.4413	.9828
11	Rumk. 1238	10	+57	− 3	14 49.5	+ 9 40 42	+0.3528	.5919	+.0795	+9.4463	.9823
11	Lal. 8599	9	−19	−73	14 53.6	+ 9 43 38	−0.8999	.5920	+.0795	+9.4774	.9795
11	Lal. 8610	8	+27	−30	15 1.6	+ 9 52 19	−0.1291	.5920	+.0793	+9.4589	.9812
11	Lal. 8613	8	+15	−42	15 2.9	+ 9 53 32	−0.3324	.5920	+.0792	+9.4640	.9808
11	α Tauri	1	+59	− 1	15 25.3	+10 15 6	+0.3900	.5922	+.0783	+9.4466	.9823
11	89 Tauri	7	+90	+32	16 20.8	+11 8 32	+0.9430	.5924	+.0770	+9.4340	.9833
11	σ¹ Tauri	5½	+90	+57	16 45.7	+11 32 29	+1.2075	.5925	+.0760	+9.4278	.9838
11	σ² Tauri	5½	+90	+44	16 46.4	+11 33 0	+1.0924	.5925	+.0759	+9.4310	.9836
11	Rumk. 1241		+63	+ 5	17 2.9	+11 49 2	+0.4967	.5926	+.0756	+9.4470	.9823
11	Rumk. 1243	8	+70	+ 6	17 15.6	−11 58 47	+0.5184	.5926	+.0753	+9.4469	.9823
11	Rumk. 1246	7	+14	−44	17 42.3	−11 33 7	−0.3606	0.5926	+0.743	+9.4696	9.9802

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Mar. 11	Rumk. 1247		+57	— 3	17 42.6	—11 32 48	+0.3545	0.5926	+.0742	+9.4519	9.9818
11	Rumk. 1254		+60	0	17 58.2	—11 17 50	+0.3965	.5927	+.0739	+9.4513	.9819
11	Rumk. 1255		+90	+47	17 59.3	—11 16 43	+1.1181	.5927	+.0738	+9.4326	.9835
11	Lal. 8852	9½	+22	—35	18 17.4	—10 59 21	—0.2214	.5928	+.0734	+9.4673	.9805
11	Rumk. 1263	9½	+90	+44	18 54.6	—10 23 30	+1.0892	.5929	+.0721	+9.4352	.9833
11	Rumk. 1268	8½	+90	+65	19 29.7	— 9 49 49	+1.2563	.5932	+.0709	+9.4319	.9836
11	Rumk. 1283	7	+79	+12	20 37.6	— 8 44 28	+0.6112	.5933	+.0688	+9.4506	.9820
11	Rumk. 1294		+90	+46	21 30.1	— 7 53 57	+1.0967	.5935	+.0672	+9.4397	.9829
11	Rumk. 1299	7½	+13	—44	21 54.1	— 7 30 55	—0.3786	.5936	+.0666	+9.4771	.9795
11	Rumk. 1300		+16	—41	21 56.4	— 7 28 43	—0.3228	.5936	+.0665	+9.4759	.9797
12	B.A.C. 1526	6	+52	— 5	0 9.7	— 5 20 26	+0.2934	.5940	+.0625	+9.4645	.9808
12	*m* Tauri	5½	—28	—72	4 11.3	— 1 28 6	—1.0113	.5948	+.0548	+9.5006	.9770
12	111 Tauri	6	+72	+11	11 6.5	+ 5 11 7	+0.5415	.5957	+.0414	+9.4722	.9800
12	113 Tauri	6	+90	+68	11 48.9	+ 5 51 58	+1.2575	.5959	+.0401	+9.4553	.9815
12	115 Tauri	5½	+34	—19	12 13.1	+ 6 15 11	—0.0083	.5959	+.0392	+9.4863	.9786
12	117 Tauri	6	+90	+22	12 34.9	+ 6 36 12	+0.7340	.5959	+.0382	+9.4600	.9803
12	119 Tauri	5½	+ 1	—58	14 14.6	+ 8 12 0	—0.5888	.5961	+.0352	+9.5013	.9770
12	B.A.C. 1728	6½	+90	+39	14 17.3	+ 8 14 40	+0.9721	.5961	+.0352	+9.4647	.9807
12	120 Tauri	6	+ 5	—52	14 46.5	+ 8 42 42	—0.5199	.5962	+.0339	+9.5001	.9771
12	122 Tauri	6	+90	+44	16 14.1	+10 6 54	+1.0330	.5962	+.0313	+9.4648	.9807
12	130 Tauri	6	+62	+ 4	20 24.4	— 9 52 26	+0.4162	.5966	+.0225	+9.4823	.9790
13	B.A.C. 1930	6½	+72	+13	2 39.9	— 3 51 24	+0.5328	.5968	+.0101	+9.4819	.9790
13	71 Orionis	5½	—27	—71	7 26.0	+ 0 43 37	—0.9961	.5968	+.0003	+9.5169	.9751
13	23 Geminor.	6½	+90	+70	16 1.9	+ 8 59 40	+1.2601	.5962	—.0187	+9.4634	.9808
13	26 Geminor.	5½	+55	+ 1	18 35.3	+11 27 8	+0.3293	.5962	—.0220	+9.4846	.9788
14	λ Geminor.	3½	+90	+26	9 6.5	+ 1 24 58	+0.8141	.5940	—.0502	+9.4603	.9811
14	B.A.C. 2432	6½	—33	—72	11 6.5	+ 3 20 23	—1.0659	.5935	—.0541	+9.5020	.9769
14	68 Geminor.	5½	+90	+50	15 28.1	+ 7 32 1	+1.1342	.5927	—.0626	+9.4432	.9826
14	*f* Geminor.	6	—20	—72	17 50.3	+ 9 48 48	—0.9137	.5920	—.0668	+9.4893	.9783
15	1 Cancri	6	+61	0	1 6.3	— 7 11 38	+0.4156	.5902	—.0798	+9.4440	.9826
15	3 Cancri	6	—59	—73	2 38.8	— 5 42 35	—1.2644	.5897	—.0827	+9.4821	.9790
15	5 Cancri	6	+10	—49	2 57.6	— 5 24 29	—0.4243	.5897	—.0831	+9.4614	.9810
15	29 Cancri	6	+90	+16	14 20.1	+ 5 32 32	+0.7327	.5850	—.1020	+9.4028	.9856
16	ξ Leonis	6	+49	—16	17 31.3	+ 7 44 38	+0.2389	.5753	—.1404	+9.3137	.9906
16	ο Leonis	3½	+90	+36	21 34.8	+11 39 33	+1.0897	.5735	—.1449	+9.2603	.9927
16	18 Leonis	6	—46	—78	23 51.0	—10 9 1	—1.2212	.5728	—.1474	+9.3325	.9897
17	B.A.C. 3345	6	—18	—78	0 22.3	— 9 38 51	—0.9097	.5725	—.1481	+9.3193	.9904
17	B.A.C. 3398	6	+90	+32	4 20.2	— 5 49 16	+1.0495	.5711	—.1519	+9.2202	.9939
17	A Leonis	5	—15	—80	9 26.0	— 0 54 4	—0.8584	.5690	—.1570	+9.2665	.9925
17	B.A.C. 3538	6½	—14	—81	15 52.9	+ 5 19 30	—0.8414	.5665	—.1624	+9.2234	.9938
17	44 Leonis	6	—16	—81	17 14.7	+ 6 38 29	—0.8851	.5658	—.1634	+9.2156	.9941
17	B.A.C. 3562	6½	—17	—81	17 24.1	+ 6 47 33	—0.8995	.5656	—.1637	+9.2151	.9941
17	48 Leonis	6	+51	—17	21 36.1	+10 50 58	+0.2793	.5642	—.1667	+9.1233	.9961
18	37 Sextantis	6	+34	—33	2 45.4	— 8 10 10	—0.0042	.5622	—.1701	+9.0962	.9967
18	*c* Leonis	5	—17	—83	9 30.3	— 1 38 49	—0.8983	.5598	—.1738	+9.0741	.9969
18	τ Leonis	5	+47	—21	22 1.0	+10 26 40	+0.2245	.5557	—.1787	+8.7960	.9992
19	89 Leonis	6	+ 5	—70	1 13.1	—10 27 10	—0.5391	.5548	—.1794	+8.6907	.9990
19	β Virginis	3½	+ 3	—73	8 52.6	— 3 2 38	—0.5753	.5525	—.1808	+8.6415	.9996
19	B.A.C. 4043	6½	+34	—34	12 54.4	+ 0 51 19	0.0000	.5514	—.1810	+8.3448	9.9999
19	13 Virginis	6	+17	—53	22 17.1	+ 9 56 2	—0.3098	.5492	—.1807	—7.9466	0.0000
19	η Virginis	3½	+ 4	—71	22 53.1	+10 30 49	—0.5451	.5490	—.1806	+7.0848	0.0000
20	38 Virginis	6	+14	—56	14 58.3	+ 2 5 25	—0.3554	.5458	—.1769	—8.6339	9.9995
20	*k* Virginis	6	— 1	—79	18 6.1	+ 5 7 14	—0.6282	.5453	—.1756	—8.7323	.9994
20	46 Virginis	6½	—40	—90	18 33.6	+ 5 33 54	—1.1779	.5451	—.1754	- 8.6656	.9995
20	48 Virginis	6	—37	—90	20 10.1	+ 7 7 22	—1.1468	0.5448	—.1748	—8.7113	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of δ.	At Washington Mean Time of Conjunction. H	Y	p′	q′	Log sin D	Log cos D
			°	°	h m	h m s					
Mar. 20	δ Virginis tr.	4½	+55	−15	23 6.0	+ 9 57 45	+0.3476	0.5445	−.1735	−8.9251	9.9985
21	66 Virginis	6	−51	−90	6 13.3	− 7 8 20	−1.2621	.5435	−.1699	−8.8917	.9987
21	ρ Virginis	5	− 6	−88	9 51.5	− 3 36 59	−0.6992	.5433	−.1677	−8.9871	.9979
21	m Virginis	6	+82	+38	14 33.5	+ 0 56 10	+1.1614	.5426	−.1646	−9.1453	.9957
22	94 Virginis	6	+ 2	−70	2 39.7	−11 20 13	−0.5375	.5418	−.1558	−9.1572	.9955
22	95 Virginis	6	+26	−41	2 52.3	−11 8 1	−0.1156	.5418	−.1557	−9.1787	.9950
22	96 Virginis	6½	+81	+12	3 58.6	−10 3 46	+0.8205	.5416	−.1547	−9.2268	.9937
22	κ Virginis	4½	+61	− 8	5 53.1	− 8 12 52	+0.4743	.5416	−.1532	−9.2246	.9938
22	2 Libræ	6	+79	+53	11 2.3	− 3 13 15	+1.2677	.5414	−.1487	−9.2847	.9918
23	ξ¹ Libræ	6	− 5	−78	2 14.8	+11 30 50	−0.6116	.5413	−.1339	−9.2942	.9914
23	ξ² Libræ	6	−64	−90	3 25.4	−11 20 45	−1.2945	.5411	−.1325	−9.2756	.9921
23	o² Libræ	6	+76	+49	16 14.2	+ 1 4 4	+1.2289	.5415	−.1184	−9.4032	.9856
23	γ Libræ	4½	+37	−24	22 21.5	+ 6 50 56	+0.1847	.5417	−.1111	−9.3940	.9862
24	η Libræ	6	+75	+ 7	2 31.8	+11 2 23	+0.7234	.5419	−.1057	−9.4199	.9844
24	49 Libræ	5½	+74	+19	10 29.6	− 5 14 47	+0.9030	.5421	−.0955	−9.4440	.9826
25	φ Ophiuchi	5	+13	−45	1 27.7	+ 9 15 10	−0.1780	.5430	−.0752	−9.4487	.9821
25	24 Scorpii	5	+73	+ 9	6 30.0	− 9 52 3	+0.7427	.5432	−.0681	−9.4776	.9795
25	B.A.C. 5695	6	−17	−90	13 32.0	− 3 3 25	−0.6864	.5437	−.0580	−9.4556	.9815
25	B.A.C. 5771	6½	+16	−39	19 26.1	+ 2 39 29	−0.0731	.5440	−.0493	−9.4764	.9796
26	B.A.C. 5839	6½	+12	−42	1 3.8	+ 8 6 30	−0.1265	.5444	−.0411	−9.4808	.9791
26	B.A.C 6060	6½	+65	+ 5	18 25.4	+ 0 55 1	+0.6724	.5451	−.0145	−9.5076	.9763
26	6 Sagittarii	6	−57	−90	21 6.3	+ 3 30 50	−1.1606	.5454	−.0106	−9.4605	9802
27	B.A.C. 6267	6	− 4	−58	9 52.1	− 8 7 48	−0.3620	.5460	−.0092	−9.4871	.9785
27	B.A.C. 6287	6	+65	+ 5	10 55.4	− 7 6 33	+0.6775	.5460	+.0108	−9.5084	.9762
27	B.A.C. 6292	6	+71	+18	11 28.2	− 6 34 47	+0.8837	.5461	+.0118	−9.5124	.9757
27	B.A.C. 6293	6½	+27	−24	11 31.2	− 6 31 51	+0.1779	.5461	+.0119	−9.4981	.9773
27	B.A.C. 6294	6	+36	−15	11 32.0	− 6 31 9	+0.3333	.5461	+.0119	−9.5012	.9770
28	ρ¹ Sagittarii	4	+63	+ 2	11 40.7	− 7 8 45	+0.6276	.5468	+.0489	−9.4921	.9780
28	ρ² Sagittarii	5½	+72	+40	11 44.6	− 7 5 0	+1.1334	.5468	+.0490	−9.5026	.9768
28	e¹ Sagittarii	6	− 7	−68	20 51.2	+ 1 44 6	−0.5071	.5470	+.0626	−9.4557	.9815
28	e² Sagittarii	5	−13	−82	21 43.2	+ 2 34 27	−0.6305	.5470	+.0640	−9.4515	.9819
29	g Sagittarii	5½	−20	−91	5 8.6	+ 9 45 31	−0.7603	.5471	+.0747	−9.4361	.9832
29	B.A.C. 6992	6½	− 6	−73	16 6.2	− 3 37 55	−0.5499	.5475	+.0903	−9.4186	.9845
29	β Capricor.	3	− 5	−72	16 12.9	− 3 31 25	−0.5432	.5475	+.0904	−9.4184	.9845
29	B.A.C. 7063	6	+36	−24	20 33.7	+ 0 40 59	+0.1884	.5476	+.0966	−9.4268	.9839
30	τ¹ Capricor.	6	+69	+ 3	0 2.5	+ 4 3 6	+0.6492	.5479	+.1012	−9.4297	.9837
30	τ² Capricor.	5	+61	− 4	0 58.2	+ 4 56 59	+0.5419	.5479	+.1025	−9.4246	.9841
30	8 Aquarii	6	+ 6	−59	10 54.1	− 9 26 16	−0.3824	.5484	+.1154	−9.3702	.9877
30	9 Aquarii	6	+38	−23	11 28.6	− 8 52 52	+0.2048	.5484	+.1163	−9.3851	.9868
30	18 Aquarii	6	+77	+19	22 31.0	+ 1 48 17	+0.9126	.5489	+.1298	−9.3664	.9879
31	λ Capricor.	5½	+78	+11	9 13.1	−11 50 19	+0.7896	.5498	+.1416	−9.3171	.9904
31	B.A.C. 7620	6	+40	−25	12 36.5	− 8 33 31	+0.1635	.5500	+.1453	−9.2781	.9920
31	θ Aquarii	4½	−14	−90	23 41.1	+ 2 9 34	−0.8110	.5512	+.1561	−9.1669	.9953
31	B.A.C. 7774	6	+65	− 5	23 42.2	+ 2 10 39	+0.5241	.5513	+.1561	−9.2267	.9937
Apr. 1	ϱ Aquarii	5½	+ 3	−68	1 17.3	+ 3 43 42	−0.5131	.5514	+.1574	−9.1691	.9952
1	67 Aquarii	6	+56	−13	12 12.2	− 9 43 41	+0.3820	.5531	+.1665	−9.1246	.9961
2	B.A.C. 8094	6	0	−76	3 26.1	+ 5 0 12	−0.6001	.5562	+.1766	−8.8666	.9988
2	B.A.C. 8134	6½	+85	+33	6 8.0	+ 7 36 48	+1.1079	.5563	+.1779	−8.9736	.9981
2	11 Piscium	6½	−43	−90	9 54.9	+11 16 15	−1.2081	.5572	+.1797	−8.6436	.9996
5	ξ¹ Ceti	4½	+90	+30	11 1.4	+ 9 51 21	+1.0320	.5804	+.1656	+9.1552	.9955
5	ξ Arietis	5½	+37	−28	16 1.4	− 9 19 31	+0.0469	.5833	+.1600	+9.2399	.9934
5	B.A.C. 755	6	+47	−19	16 50.7	− 8 31 58	+0.2212	.5836	+.1591	+9.2380	.9934
5	31 Arietis	5½	−29	−78	20 58.1	− 4 33 39	−1.0486	.5853	+.1547	+9.3131	.9906
5	B.A.C. 830	6	+90	+32	23 28.2	− 2 9 8	+1.0406	.5861	+.1517	+9.2469	.9931
6	38 Arietis	5	+ 5	−64	0 28.5	− 1 11 6	−0.5273	0.5865	+.1505	+9.3137	9.9906

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Apr. 6	B.A.C. 987	6½	+59	− 7	11 27.1	+ 9 22 59	+0.3911	0.5907	+.1364	+9.3367	9.9895
7	Wei III.1085	8½	+90	+24	8 58.0	+ 6 4 49	+0.8578	.5972	+.1020	+9.4032	.9856
7	Lal. 7702	9½	−34	−73	11 0.0	+ 8 2 5	−1.0902	.5977	+.0994	+9.4611	.9811
7	Weis. IV. 24	9	+90	+27	11 34.2	+ 8 34 54	+0.8912	.5979	+.0982	+9.4097	.9852
7	Lal. 7753	7½	+46	−14	11 38.8	+ 8 39 23	+0.1872	.5979	+.0981	+9.4296	.9837
7	B.A.C. 1281	7	+ 6	−57	11 41.4	+ 8 41 51	−0.5106	.5979	+.0980	+9.4481	.9822
7	Rumk. 1103	7	+69	+ 4	11 45.2	+ 8 45 31	+0.5168	.5979	+.0979	+9.4207	.9844
7	Rumk. 1108	9	+90	+61	12 10.9	+ 9 10 15	+1.2488	.5980	+.0973	+9.4011	.9858
7	Rumk. 1110		−34	−73	12 15.6	+ 9 14 47	−1.0902	.5980	+.0973	+9.4642	.9808
7	48 Tauri	6	+90	+28	13 36.2	+10 32 12	+0.9095	.5984	+.0946	+9.4148	.9848
7	Rumk. 1136	6	+42	−17	14 6.7	+10 55 46	+0.1292	.5984	+.0940	+9.4371	.9831
7	γ Tauri	4	+90	+23	15 12.7	−11 54 59	+0.8204	.5987	+.0919	+9.4214	.9843
7	55 Tauri	7	+30	−28	15 14.6	−11 53 12	−0.0744	.5987	+.0919	+9.4455	.9824
7	Rumk. 1161		−33	−73	15 50.6	−11 18 37	−1.0792	.5987	+.0906	+9.4722	.9800
7	Rumk. 1163	8	+17	−42	15 53.6	−11 15 39	−0.3031	.5987	+.0906	+9.4529	.9818
7	δ¹ Tauri	4	−26	−73	16 26.0	−10 44 33	−0.9963	.5987	+.0894	+9.4715	.9801
7	63 Tauri	6	+22	−36	16 38.6	−10 32 28	−0.2134	.5987	+.0891	+9.4524	.9818
7	B.A.C. 1351	6½	+40	−18	16 40.0	−10 31 6	+0.1041	.5990	+.0890	+9.4442	.9825
7	δ² Tauri	6	−16	−73	16 54.0	−10 17 37	−0.8600	.5990	+.0887	+9.4691	.9803
7	Lal. 8249	7½	+ 7	−54	17 0.8	−10 11 5	−0.4858	.5990	+.0886	+9.4601	.9811
7	Lal. 8256	8	+18	−40	17 3.3	−10 8 42	−0.2877	.5991	+.0885	+9.4552	.9816
7	70 Tauri	7	+90	+16	17 32.6	− 9 40 32	+0.6989	.5992	+.0874	+9.4304	.9826
7	Lal. 8311	8	+90	+47	17 44.2	− 9 20 23	+1.1298	.5993	+.0871	+9.4191	.9845
7	Rumk. 1188	6½	+90	+47	17 44.4	− 9 29 12	+1.1314	.5993	+.0871	+9.4191	.9845
7	Rumk. 1189		+23	−34	17 50.2	− 9 23 36	−0.1925	.5993	+.0870	+9.4545	.9816
7	71 Tauri	6	+90	+39	17 50.3	− 9 23 28	+1.0459	.5993	+.0870	+9.4217	.9843
7	Rumk. 1192		+ 7	−54	17 58.0	− 9 20 55	−0.4899	.5994	+.0869	+9.4621	.9809
7	Rumk. 1198	6	+90	+51	18 8.4	− 9 6 8	+1.1665	.5994	+.0866	+9.4191	.9845
7	Rumk. 1200		+90	+46	18 20.3	− 8 54 39	+1.1138	.5994	+.0863	+9.4210	.9844
7	Rumk. 1203		+62	0	18 37.7	− 8 37 58	+0.4241	.5994	+.0854	+9.4403	.9828
7	75 Tauri	6	+58	− 3	18 40.1	− 8 35 36	+0.3698	.5994	+.0854	+9.4419	.9827
7	θ¹ Tauri	4½	+90	+20	18 43.4	− 8 32 28	+0.7704	.5994	+.0853	+9.4313	.9836
7	θ² Tauri	4½	+90	+26	18 47.7	− 8 28 15	+0.8652	.5994	+.0852	+9.4283	.9838
7	Rumk. 1210		+76	+ 9	18 53.1	− 8 23 8	+0.5852	.5994	+.0851	+9.4366	.9831
7	Rumk. 1212	6	−12	−73	18 59.9	− 8 16 30	−0.7945	.5994	+.0849	+9.4720	.9800
7	Rumk. 1214		−36	−73	19 3.3	− 8 13 19	−1.1079	.5994	+.0846	+9.4797	.9793
7	Rumk. 1215	7	−39	−73	19 3.9	− 8 12 48	−1.1379	.5994	+.0846	+9.4804	.9792
7	80 Tauri *pr.*	6	+90	+49	19 21.6	− 7 55 49	+1.1447	.5995	+.0844	+9.4226	.9842
7	B.A.C. 1391	5	+78	+10	19 30.8	− 7 46 55	+0.5991	.5995	+.0837	+9.4377	.9831
7	81 Tauri	5½	+90	+45	19 33.7	− 7 44 9	+1.1059	.5995	+.0836	+9.4241	.9841
7	B.A.C. 1394	7	+84	+13	19 36.2	− 7 41 42	+0.6465	.5995	+.0835	+9.4367	.9831
7	Rumk. 1227	7	+90	+36	19 50.6	− 7 27 53	+1.0035	.5995	+.0832	+9.4276	.9839
7	85 Tauri	6	+90	+35	20 2.5	− 7 16 28	+0.9826	.5995	+.0829	+9.4285	.9833
7	Rumk. 1232		+50	− 9	20 14.0	− 7 5 24	+0.2481	.5995	+.0827	+9.4484	.9821
7	Rumk. 1233		−27	−73	20 19.7	− 6 59 53	−1.0697	.5995	+.0825	+9.4798	.9793
7	Rumk. 1236		+90	+26	20 25.5	− 6 54 23	+0.8564	.5995	+.0824	+9.4328	.9835
7	B.A.C. 1406	7	+74	+ 8	20 44.8	− 6 35 48	+0.5623	.5996	+.0818	+9.4413	.9828
7	Rumk. 1238	10	+60	− 1	21 4.4	− 6 16 58	+0.3998	.5997	+.0812	+9.4463	.9823
7	Lal. 8599	9	−15	−73	21 8.2	− 6 13 17	−0.8805	.5998	+.0810	+9.4773	.9795
7	Lal. 8610	8	+30	−27	21 16.0	− 6 5 48	−0.0771	.5999	+.0807	+9.4588	.9812
7	Lal. 8618	8	+19	−39	21 17.3	− 6 4 36	−0.2782	.5999	+.0807	+9.4640	.9808
7	α Tauri	1	+63	+ 1	21 39.2	− 5 43 33	+0.4366	.6001	+.0800	+9.4466	.9823
7	89 Tauri	7	+90	+35	22 33.4	− 4 51 27	+0.9840	.6001	+.0783	+9.4340	.9833
7	σ¹ Tauri	5½	+90	+62	22 57.7	− 4 28 6	+1.2459	.6001	+.0776	+9.4278	.9838
7	σ² Tauri	5½	+90	+48	23 0.3	− 4 25 37	+1.1319	0.6001	+.0774	+9.4310	9.9836

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Apr. 7	Rumk. 1241		+72	+ 8	23 14.5	− 4 11 57	+0.5427	0.6002	+.0770	+9.4470	9.9823
7	Rumk. 1243	8	+74	+ 9	23 26.9	− 4 0 4	+0.5645	.6002	+.0763	+9.4469	.9823
7	Rumk. 1246	7	+17	−40	23 52.9	− 3 35 1	−0.3052	.6002	+.0757	+9.4696	.9802
7	Rumk. 1247		+60	0	23 53.2	− 3 34 43	+0.4025	.6002	+.0757	+9.4519	.9819
8	Rumk. 1254		+64	+ 2	0 8.4	− 3 20 6	+0.4442	.6003	+.0753	+9.4513	.9819
8	Rumk. 1255		+90	+51	0 9.6	− 3 18 59	+1.1582	.6003	+.0753	+9.4326	.9835
8	Lal. 8852	9½	+25	−32	0 27.2	− 3 2 4	−0.1673	.6005	+.0744	+9.4673	.9805
8	Rumk. 1263	9½	+90	+48	1 3.6	− 2 27 4	+1.1301	.6005	+.0735	+9.4351	.9833
8	Rumk. 1283	7	+86	+15	2 44.3	− 0 50 22	+0.6577	.6006	+.0701	+9.4507	.9820
8	Rumk. 1294		+90	+50	3 35.6	− 0 1 2	+1.1387	.6006	+.0683	+9.4397	.9830
8	Rumk. 1299	7½	+16	−41	3 59.0	+ 0 21 28	−0.3219	.6008	+.0678	+9.4772	.9795
8	Rumk. 1300		+19	−37	4 1.3	+ 0 23 39	−0.2665	.6009	+.0677	+9.4759	.9796
8	B.A.C. 1526	6	+56	− 2	6 11.7	+ 2 28 58	+0.3442	.6009	+.0635	+9.4644	.9807
8	*m* Tauri	5½	−23	−72	10 8.2	+ 6 16 13	−0.9465	.6012	+.0577	+9.5006	.9771
8	111 Tauri	6	+78	+14	16 55.2	−11 12 42	+0.5939	.6017	+.0420	+9.4722	.9800
8	115 Tauri	5½	+37	−16	18 0.7	−10 9 50	+0.0490	.6017	+.0398	+9.4863	.9786
8	117 Tauri	6	+90	+26	18 22.1	− 9 49 13	+0.7860	.6017	+.0372	+9.4690	.9803
8	119 Tauri	5½	+ 4	−52	20 0.0	− 8 15 9	−0.5263	.6017	+.0357	+9.5012	.9770
8	B.A.C. 1728	6½	+90	+42	20 2.7	− 8 12 34	+1.0195	.6017	+.0357	+9.4647	.9807
8	120 Tauri	6	+ 8	−47	20 31.4	− 7 44 59	−0.4579	.6016	+.0344	+9.5001	.9771
8	122 Tauri	6	+90	+48	21 57.5	− 6 22 16	+1.0834	.6016	+.0317	+9.4648	.9807
9	130 Tauri	6	+66	+ 9	2 3.8	− 2 25 38	+0.4724	.6015	+.0233	+9.4823	.9790
9	B.A.C. 1930	6½	+77	+16	8 14.0	+ 3 30 2	+0.5901	.6008	+.0107	+9.4820	.9790
9	71 Orionis	5½	−22	−71	12 56.6	+ 8 1 37	−0.9294	.6002	+.0008	+9.5169	.9752
9	26 Geminor.	5½	+60	+ 4	23 59.9	− 5 20 54	+0.3918	.5984	−.0197	+9.4846	.9788
10	λ Geminor.	3½	+90	+30	14 27.7	+ 8 33 29	+0.8782	.5938	−.0505	+9.4603	.9811
10	B.A.C. 2432	6½	−24	−72	16 27.6	+10 28 49	−1.0002	.5929	−.0543	+9.5020	.9769
10	63 Geminor.	5½	+90	+57	20 49.4	− 9 19 21	+1.1995	.5922	−.0623	+9.4432	.9826
10	*f* Geminor.	6	−16	−72	23 11.8	− 7 2 18	−0.8488	.5906	−.0665	+9.4893	.9783
11	1 Cancri	6	+67	+ 4	6 29.6	− 0 1 1	+0.4812	.5876	−.0798	+9.4440	.9825
11	3 Cancri	6	−47	−73	8 2.6	+ 1 28 31	−1.2917	.5871	−.0823	+9.4821	.9790
11	5 Cancri	6	+14	−45	8 21.5	+ 1 46 44	−0.3602	.5870	−.0827	+9.4614	.9810
11	B.A.C. 2731	6½	−58	−73	11 54.5	+ 5 11 51	−1.2627	.5853	−.0889	+9.4758	.9797
11	29 Leonis	6	+90	+20	19 49.3	−11 10 51	+0.7993	.5818	−.1018	+9.4028	.9857
12	ξ Leonis	6	+52	−13	23 23.2	− 8 36 3	+0.2976	.5700	−.1382	+9.3137	.9906
13	σ Leonis	3½	+90	+42	3 30.9	− 4 36 54	+1.1540	.5674	−.1438	+9.2603	.9927
13	18 Leonis	6	−41	−78	5 49.6	− 2 22 59	−1.1746	.5662	−.1462	+9.3325	.9897
13	B.A.C. 3345	6	−15	−78	6 21.5	− 1 52 14	−0.8612	.5661	−.1466	+9.3193	.9903
13	A Leonis	5	−12	−80	15 35.6	+ 7 2 59	−0.8136	.5621	−.1556	+9.2665	.9925
13	B.A.C 3538	6½	−11	−81	22 10.3	−10 35 30	−0.7998	.5596	−.1609	+9.2234	.9938
13	44 Leonis	6	−14	−81	23 38.7	− 9 15 2	−0.8449	.5591	−.1621	+9.2156	.9941
13	B.A.C. 3564	6½	−15	−81	23 43.3	− 9 5 45	−0.8594	.5591	−.1622	+9.2151	.9941
14	48 Leonis	6	+54	−14	4 0.4	− 4 57 10	+0.3267	.5573	−.1653	+9.1233	.9961
14	37 Sextantis	6	+36	−31	9 16.1	+ 0 8 5	+0.0379	.5557	−.1686	+9.0902	.9967
14	c Leonis	5	−15	−83	16 9.5	+ 6 47 52	−0.8682	.5531	−.1723	+9.0741	.9969
15	τ Leonis	5	+49	−20	5 6.6	− 4 41 7	+0.2554	.5492	−.1773	+8.7961	.9992
15	89 Leonis	6	+ 6	−68	8 11.4	− 1 41 19	−0.5160	.5484	−.1782	+8.8207	.9990
15	β Virginis	3½	+ 4	−72	15 59.6	+ 5 52 1	−0.5590	.5466	−.1796	+8.6415	.9996
15	B.A.C. 4043	6½	+37	−33	20 5.9	+ 9 50 26	+0.0177	.5459	−.1800	+8.3448	9.9999
16	13 Virginis	6	+18	−53	5 38.3	− 4 55 8	−0.3023	.5441	−.1799	−6.9466	0.0000
16	η Virginis	3½	+ 5	−70	6 14.9	− 4 19 45	−0.5399	.5441	−.1799	+7.0848	0.0000
16	38 Virginis	6	+14	−57	22 34.3	+11 29 5	−0.3629	.5420	−.1765	−8.6939	9.9995
17	κ Virginis	6	− 2	−80	1 44.4	− 9 26 43	−0.6400	.5418	−.1754	−8.7323	.9994
17	46 Virginis	6½	−42	−90	2 12.3	− 8 59 42	−1.1937	.5419	−.1753	−8.6656	.9995
17	48 Virginis	6	−38	−90	3 50.0	− 7 25 2	−1.1636	0.5415	−.1746	−8.7114	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Apr. 17	θ Virginis pr.	4½	+54	−16	6 47.9	− 4 32 38	+0.3366	0.5414	−.1734	−8.9254	9.9985
17	66 Virginis	6	−55	−90	13 59.6	+ 2 25 43	−1.2882	.5411	−.1700	−8.8917	.9987
17	l² Virginis	5	− 7	−90	17 39.8	+ 5 59 3	−0.7256	.5410	−.1680	−8.9874	.9979
17	m Virginis	6	+82	+36	22 24.0	+10 34 29	+1.1387	.5410	−.1651	−9.1454	.9957
18	94 Virginis	6	0	−74	10 34.7	− 1 37 27	−0.5786	.5410	−.1565	−9.1572	.9955
18	95 Virginis	6	+23	−43	10 47.4	− 1 25 11	−0.1555	.5410	−.1564	−9.1787	.9950
18	96 Virginis	6½	+81	+10	11 54.0	− 0 20 38	+0.7827	.5410	−.1556	−9.2268	.9937
18	κ Virginis	4½	+58	−10	13 49.0	+ 1 30 48	+0.4334	.5411	−.1540	−9.2246	.9938
18	2 Libræ	6	+79	+46	18 59.3	+ 6 31 28	+1.2235	.5414	−.1496	−9.2847	.9918
19	ξ¹ Libræ	6	− 8	−87	16 13.1	− 2 43 7	−0.6747	.5421	−.1351	−9.2942	.9914
20	o² Libræ	6	+76	+39	0 11.6	+10 49 15	+1.1513	.5410	−.1192	−9.4032	.9856
20	γ Libræ	4½	+33	−28	6 18.1	− 7 15 45	+0.1046	.5434	−.1124	−9.3940	.9863
20	η Libræ	6	+69	+ 2	10 27.6	− 3 14 3	+0.6400	.5437	−.1069	−9.4199	.9844
20	49 Libræ	5½	+74	+13	18 23.8	+ 4 27 9	+0.8130	.5444	−.0967	−9.4440	.9825
21	φ Ophiuchi	5	+ 8	−52	9 18.3	− 5 6 30	−0.2807	.5453	−.0766	−9.4487	.9821
21	24 Scorpii	5	+65	+ 2	14 19.4	− 0 14 56	+0.6368	.5455	−.0694	−9.4777	.9795
21	B.A.C. 5695	6	−24	−90	21 19.7	+ 7 32 4	−0.7982	.5458	−.0592	−9.4556	.9815
22	B.A.C. 5771	6½	+10	−46	3 12.6	−11 46 16	−0.1889	.5459	−.0504	−9.4765	.9796
22	B.A.C. 5839	6½	+ 6	−50	8 49.3	− 6 20 18	−0.2460	.5461	−.0418	−9.4809	.9791
23	B.A.C. 6060	6½	+52	− 2	2 8.9	+10 26 17	+0.5437	.5461	−.0154	−9.5076	.9763
23	B.A.C. 6267	6	−11	−69	17 36.4	+ 1 24 10	−0.5803	.5460	+.0089	−9.4871	.9785
23	B.A.C. 6287	6	+52	− 3	18 39.8	+ 2 25 33	+0.5415	.5459	+.0105	−9.5084	.9762
23	B.A.C. 6292	6	+71	+ 9	19 12.7	+ 2 57 23	+0.7478	.5458	+.0111	−9.5124	.9757
23	B.A.C. 6293	6½	+19	−32	19 15.7	+ 3 0 19	+0.0402	.5458	+.0112	−9.4980	.9773
24	B.A.C. 6294	6	+28	−23	19 16.4	+ 3 1 2	+0.1959	.5458	+.0112	−9.5012	.9770
25	ρ¹ Sagittarii	4	+51	− 7	19 32.4	+ 2 30 42	+0.4839	.5446	+.0486	−9.4921	.9780
25	ρ² Sagittarii	5½	+72	+26	19 36.2	+ 2 34 24	+0.9917	.5446	+.0486	−9.5026	.9768
25	B.A.C. 6658	6	+72	+52	22 37.7	+ 5 30 4	+1.2257	.5444	+.0531	−9.5042	.9766
25	e¹ Sagittarii	6	−15	−86	4 47.6	+11 28 15	−0.6581	.5443	+.0622	−9.4567	.9815
25	e² Sagittarii	5	−22	−90	5 40.2	−11 40 51	−0.7823	.5441	+.0635	−9.4515	.9819
25	q Sagittarii	5½	−28	−90	13 10.3	− 4 25 0	−0.8933	.5439	+.0741	−9.4361	.9832
26	B.A.C. 6902	6½	−15	−90	0 16.2	+ 6 19 50	−0.7032	.5433	+.0896	−9.4186	.9845
26	β Capricor.	3	−14	−90	0 23.0	+ 6 26 26	−0.6966	.5432	+.0900	−9.4185	.9845
26	B.A.C. 7063	6	+27	−32	4 47.5	+10 42 33	+0.0401	.5431	+.0959	−9.4268	.9839
26	τ¹ Capricor.	6	+57	− 6	8 19.4	− 9 52 16	+0.5045	.5430	+.1003	−9.4297	.9837
26	τ² Capricor.	5	+50	−12	9 15.9	− 8 57 31	+0.3965	.5429	+.1016	−9.4246	.9841
27	8 Aquarii	6	− 2	−71	19 21.4	+ 0 48 51	−0.5323	.5428	+.1144	−9.3701	.9877
26	9 Aquarii	6	+30	−31	19 56.4	+ 1 22 48	+0.0590	.5428	+.1153	−9.3850	.9868
27	18 Aquarii	6	+77	+ 9	7 10.5	−11 44 24	+0.7759	.5430	+.1285	−9.3664	.9879
27	λ Capricor.	5½	+74	+ 2	18 4.4	− 1 11 8	+0.6566	.5434	+.1405	−9.3170	.9904
27	B.A.C. 7620	6	+32	−33	21 31.6	+ 2 9 30	+0.0278	.5438	+.1442	−9.2780	.9920
28	θ Aquarii	4½	−23	−90	8 48.7	−10 54 54	−0.9465	.5447	+.1549	−9.1668	.9953
28	B.A.C. 7774	6	+58	−13	8 49.8	−10 53 46	+0.3981	.5448	+.1550	−9.2266	.9937
28	ρ Aquarii	5½	− 4	−82	10 26.8	− 9 19 56	−0.6454	.5450	+.1565	−9.1690	.9952
28	67 Aquarii	6	+58	−20	21 33.6	+ 1 25 41	+0.2645	.5469	+.1656	−9.1846	.9961
29	B.A.C. 8094	6	− 6	−90	13 2.4	− 7 35 14	−0.7083	.5502	+.1757	−8.8666	.9988
29	96 Aquarii	5½	+84	+60	14 50.2	− 5 51 9	+1.3161	.5506	+.1768	−9.0083	.9977
30	20 Piscium	6	+87	+52	4 17.9	+ 7 10 13	+1.2788	.5546	+.1826	−8.7858	9.9992
30	B.A.C. 8311	6½	−33	−90	7 30.0	+10 15 57	−1.1105	.5558	+.1837	−8.0418	0.0000
30	B.A.C. 8365	6½	+59	−12	12 16.4	− 9 7 7	+0.4027	.5576	+.1849	−8.3369	9.9999
30	B.A.C. 57	6½	− 8	−89	18 8.0	− 3 27 19	−0.7674	.5596	+.1858	+8.2190	9.9999
30	Venus		+87	+ 4	19 38.2	− 2 0 5	+0.6891	.5146	+.1674	−7.5314	0.0000
30	44 Piscium	6	+14	−58	21 37.7	− 0 4 38	−0.3769	.5613	+.1862	+8.3880	9.9999
May 1	73 Piscium	6½	−16	−85	15 24.0	− 6 54 47	−0.8847	.5694	+.1843	+8.9351	.9984
1	77 Pisci. pr.	7	+32	−37	15 49.5	− 6 30 11	−0.0524	0.5695	+.1842	+8.8645	9.9988

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
May 1	ε Piscium	5½	+ 1	—75	16 58.1	— 5 23 57	—0.5988	0.5699	+.1839	+8.9354	9.9984
1	MERCURY		+90	+19	18 4.0	— 4 20 22	+0.9128	.5184	+.1611	+8.8044	.9991
2	96 Piscium	6½	0	—76	2 2.0	+ 3 20 51	—0.6253	.5745	+.1802	+9.0608	.9971
2	μ Piscium	4½	+79	+ 1	2 31.0	+ 3 48 45	+0.6229	.5752	+.1799	+8.9780	.9980
4	48 Tauri	6	+90	+35	22 20.9	— 2 55 11	+0.9847	.6073	+.0979	+9.4148	.9848
4	Rumk. 1136	6	+48	—12	22 44.7	— 2 32 18	+0.2159	.6076	+.0968	+9.4371	.9831
4	γ Tauri	4	+90	+28	23 54.5	— 1 25 21	+0.8091	.6079	+.0947	+9.4214	.9843
4	55 Tauri	7	+35	—23	23 56.5	— 1 23 27	+0.0169	.6079	+.0947	+9.4455	.9824
5	Rumk. 1163	8	+23	—36	0 34.4	— 0 47 2	—0.2080	.6083	+.0933	+9.4529	.9818
5	δ^1 Tauri	4	—18	—73	1 5.7	— 0 16 57	—0.8906	.6084	+.0926	+9.4715	.9801
5	63 Tauri	6	+28	—30	1 18.0	— 0 5 13	—0.1185	.6084	+.0923	+9.4524	.9818
5	B.A.C. 1351	6½	+36	—22	1 19.3	— 0 3 53	+0.0301	.6084	+.0922	+9.4486	.9822
5	δ^2 Tauri	6	— 9	—73	1 33.0	+ 0 9 12	—0.7554	.6085	+.0914	+9.4692	.9803
5	Lal. 8249	7½	+13	—47	1 39.6	+ 0 15 34	—0.3865	.6085	+.0913	+9.4601	.9811
5	Lal. 8256	8	+23	—35	1 42.0	+ 0 17 49	—0.1910	.6085	+.0912	+9.4552	.9816
5	δ^3 Tauri	5	—45	—73	2 4.9	+ 0 39 49	—1.1896	.6086	+.0907	+9.4810	.9791
5	70 Tauri	7	+90	+21	2 10.4	+ 0 45 7	+0.7825	.6086	+.0905	+9.4305	.9836
5	Lal. 8311	8	+90	+56	2 21.6	+ 0 55 55	+1.2078	.6087	+.0903	+9.4191	.9845
5	Rumk. 1188	6½	+90	+56	2 21.8	+ 0 56 6	+1.2089	.6087	+.0898	+9.4191	.9845
5	71 Tauri	6	+90	+46	2 27.6	+ 1 1 37	+1.1251	.6087	+.0896	+9.4217	.9843
5	Rumk. 1198	6	+90	+61	2 45.1	+ 1 18 27	+1.2445	.6088	+.0892	+9.4191	.9845
5	75 Tauri	6	+65	+ 2	3 15.9	+ 1 48 1	+0.4505	.6090	+.0884	+9.4418	.9827
5	θ^1 Tauri	4½	+90	+25	3 19.1	+ 1 51 3	+0.8547	.6090	+.0884	+9.4313	.9836
5	θ^2 Tauri	4½	+90	+32	3 21.3	+ 1 53 12	+0.9480	.6090	+.0883	+9.4288	.9838
5	Rumk. 1212	6	— 5	—71	3 35.0	+ 2 6 23	—0.6882	.6091	+.0876	+9.4720	.9800
5	Rumk. 1215	7	—29	—73	3 38.9	+ 2 10 7	—1.0266	.6091	+.0874	+9.4804	.9792
5	80 Tauri *pr.*	6	+90	+58	3 56.1	+ 2 26 34	+1.2246	.6091	+.0870	+9.4225	.9842
5	B.A.C. 1391	5	+90	+15	4 5.1	+ 2 35 12	+0.6869	.6091	+.0868	+9.4377	.9831
5	81 Tauri	5½	+90	+53	4 7.8	+ 2 37 51	+1.1866	.6091	+.0867	+9.4241	.9841
5	B.A.C. 1394	7	+90	+18	4 10.3	+ 2 40 16	+0.7338	.6091	+.0867	+9.4366	.9831
5	Rumk. 1227	7	+90	+43	4 24.3	+ 2 53 38	+1.0859	.6093	+.0859	+9.4275	.9839
5	85 Tauri	6	+90	+41	4 35.8	+ 3 4 41	+1.0659	.6093	+.0856	+9.4285	.9838
5	B.A.C. 1406	7	+85	+13	5 16.8	+ 3 44 2	+0.6519	.6094	+.0846	+9.4413	.9828
5	Lal. 8610	8	+36	—22	5 47.1	+ 4 13 7	+0.0224	.6097	+.0833	+9.4589	.9812
5	Lal. 8613	8	+24	—33	5 48.3	+ 4 14 17	—0.1757	.6097	+.0833	+9.4640	.9808
5	α Tauri	1	+71	+ 6	6 9.5	+ 4 34 39	+0.5294	.6097	+.0828	+9.4465	.9823
5	89 Tauri	7	+90	+42	7 2.1	+ 5 25 5	+1.0703	.6098	+.0809	+9.4338	.9834
5	σ^2 Tauri	5½	+90	+57	7 28.1	+ 5 50 6	+1.2165	.6100	+.0798	+9.4308	.9836
5	Rumk. 1241		+83	+13	7 41.9	+ 6 3 19	+0.6561	.6100	+.0795	+9.4470	.9823
5	Rumk. 1243	8	+84	+16	7 53.9	+ 6 14 50	+0.6578	.6100	+.0792	+9.4469	.9823
5	Rumk. 1246	7	+23	—34	8 19.2	+ 6 39 4	—0.1991	.6100	+.0785	+9.4686	.9802
5	Rumk. 1247		+68	+ 5	8 19.5	+ 6 39 21	+0.4984	.6101	+.0785	+9.4518	.9819
5	Rumk. 1254		+72	+ 7	8 34.2	+ 6 53 30	+0.5400	.6102	+.0776	+9.4513	.9819
5	Rumk. 1255		+90	+62	8 35.3	+ 6 54 35	+1.2439	.6102	+.0776	+9.4325	.9835
5	Lal. 8852	9½	+31	—26	8 52.4	+ 7 10 57	—0.0622	.6102	+.0772	+9.4673	.9805
5	Rumk. 1263	9½	+90	+58	9 27.7	+ 7 44 49	+1.2173	.6104	+.0758	+9.4351	.9833
5	Rumk. 1276		—37	—72	10 27.0	+ 8 41 46	—1.1166	.6107	+.0738	+9.4956	.9776
5	Rumk. 1283	7	+90	+20	11 5.2	+ 9 18 22	+0.7537	.6107	+.0728	+9.4506	.9820
5	Rumk. 1299	7½	+23	—34	12 17.6	+10 23 50	—0.2100	.6108	+.0705	+9.4771	.9795
5	Rumk. 1300		+26	—31	12 19.7	+10 29 56	—0.1555	.6108	+.0704	+9.4759	.9797
5	Rumk. 1302	7	—60	—72	12 21.1	+10 31 14	—1.2526	.6108	+.0704	+9.5019	.9769
5	B.A.C. 1526	6	+64	+ 3	14 25.7	—11 29 15	+0.4487	.6112	+.0656	+9.4645	.9808
5	*m* Tauri	5½	—13	—72	18 15.0	— 7 49 10	—0.8181	.6118	+.0581	+9.5005	.9771
6	111 Tauri	6	+90	+20	0 48.9	— 1 31 20	+0.7081	.6122	+.0439	+9.4722	.9800
6	115 Tauri	5½	+45	— 9	1 52.2	— 0 30 34	+0.1727	0.6122	+.0416	+9.4863	9.9786

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. *H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
May 6	117 Tauri	6	+90	+33	2 12.9	— 0 10 41	+0.8989	0.6122	+.0411	+9.4690	9.9803
6	119 Tauri	5½	+12	—42	3 47.6	+ 1 20 11	—0.3918	.6123	+.0374	+9.5013	.9770
6	B.A.C. 1728	6½	+90	+52	3 50.2	+ 1 22 41	+1.4308	.6123	+.0374	+9.4647	.9807
6	120 Tauri	6	+16	—38	4 17.6	+ 1 48 55	—0.3243	.6122	+.0366	+9.5001	.9771
6	122 Tauri	6	+90	+59	5 41.3	+ 3 9 12	+1.1962	.6122	+.0333	+9.4648	.9807
6	130 Tauri	6	+79	+16	9 39.5	+ 6 57 47	+0.5991	.6118	+.0246	+9.4822	.9790
6	B.A.C. 1930	6½	+90	+24	15 37.7	—11 18 37	+0.7216	.6112	+.0116	+9.4819	.9791
6	71 Orionis	5½	—10	—71	20 11.1	— 6 56 13	—0.7707	.6105	+.0019	+9.5169	.9752
7	26 Geminor.	5½	+73	+13	6 53.6	+ 3 20 19	+0.5414	.6076	—.0213	+9.4846	.9788
7	λ Geminor.	3½	+90	+42	20 55.9	— 7 10 47	+1.0337	.6023	—.0504	+9.4603	.9811
7	B.A.C. 2432	6½	—13	—72	22 52.5	— 5 18 46	—0.8192	.6013	—.0544	+9.5020	.9769
8	*f* Geminor.	6	— 4	—67	5 26.1	+ 0 59 23	—0.6665	.5981	—.0674	+9.4883	.9783
8	1 Cancri	6	+85	+13	12 33.1	+ 7 49 55	+0.6525	.5946	—.0804	+9.4440	.9826
8	3 Cancri	6	—27	—73	14 3.9	+ 9 17 18	—1.0113	.5936	—.0829	+9.4421	.9790
8	5 Cancri	6	+24	—33	14 22.4	+ 9 35 6	—0.1789	.5935	—.0837	+9.4614	.9810
8	B.A.C. 2731	6½	—32	—73	17 50.7	—11 4 31	—1.0705	.5916	—.0896	+9.4757	.9797
9	29 Cancri	6	+90	+32	1 35.9	— 3 36 54	+0.9739	.5871	—.1026	+9.4027	.9857
9	54 Cancri	6½	—58	—74	11 0.6	+ 5 26 56	—1.2726	.5814	—.1167	+9.4361	.9832
10	ξ Leonis	6	+66	— 3	4 46.8	— 1 25 2	+0.4819	.5708	—.1399	+9.3137	.9906
10	18 Leonis	6	—23	—78	11 10.5	+ 4 45 13	—0.9858	.5674	—.1467	+9.3325	.9897
10	B.A.C. 3345	6	— 3	—76	11 42.2	+ 5 15 47	—0.6739	.5670	—.1474	+9.3193	.9904
10	B.A.C. 3398	6	+90	+60	15 43.3	+ 9 8 34	+1.2894	.5646	—.1513	+9.2212	.9939
10	A Leonis	5	— 1	—74	20 53.9	— 9 51 22	—0.6302	.5618	—.1560	+9.2665	.9925
11	B.A.C. 3538	6½	0	—74	3 28.0	— 3 30 33	—0.6803	.5583	—.1614	+9.2234	.9938
11	44 Leonis	6	+ 7	—63	4 51.4	— 2 9 56	—0.4928	.5577	—.1624	+9.2156	.9941
11	B.A.C. 3562	6½	— 4	—79	5 1.1	— 2 0 39	—0.6809	.5577	—.1625	+9.2151	.9941
11	48 Leonis	6	+67	— 5	9 18.5	+ 2 8 12	+0.5010	.5558	—.1655	+9.1234	.9961
11	49 Leonis. *pr.*	6	—51	—81	9 24.1	+ 2 13 36	—1.2677	.5554	—.1656	+9.2092	.9942
11	37 Sextantis	6	+47	—21	14 35.0	+ 7 14 17	+0.2990	.5531	—.1688	+9.0902	.9967
11	*c* Leonis	5	— 5	—83	21 30.2	—10 4 7	—0.7027	.5501	—.1723	+9.0741	.9969
12	τ Leonis	5	+60	—11	10 31.2	+ 2 32 29	+0.4100	.5455	—.1773	+8.7961	.9991
12	89 Leonis	6	+14	—57	13 39.3	+ 5 33 58	—0.3672	.5445	—.1781	+8.8808	.9990
12	β Virginis	3½	+12	—61	21 32.4	—10 47 54	—0.4188	.5424	—.1795	+8.6415	.9996
13	B.A.C. 4043	6½	+43	—26	1 41.4	— 6 46 40	+0.1545	.5413	—.1798	+8.3449	9.9999
13	13 Virginis	6	+25	—45	11 20.9	+ 2 34 50	—0.1794	.5394	—.1798	—6.9438	0.0000
13	η Virginis	3½	+11	—61	11 57.9	+ 3 10 41	—0.4186	.5393	—.1797	+7.0867	0.0000
14	38 Virginis	6	+20	—50	4 30.6	— 4 47 10	—0.2658	.5372	—.1764	—8.6938	9.9995
14	κ Virginis	6	+ 4	—71	7 43.4	— 1 40 19	—0.5493	.5368	—.1754	—8.7323	.9994
14	46 Virginis	6½	—33	—90	8 11.6	— 1 12 55	—1.1064	.5368	—.1753	—8.6656	.9995
14	48 Virginis	6	—31	—90	9 50.7	+ 0 23 6	—1.0789	.5368	—.1747	—8.7113	.9994
14	θ Virginis *tr.*	4½	+60	—11	12 51.1	+ 3 17 58	+0.4236	.5365	—.1735	—8.9254	.9984
14	66 Virginis	6	—45	—90	20 8.8	+10 22 20	—1.2215	.5365	—.1709	—8.8917	.9987
14	*l*² Virginis	5	— 3	—83	23 51.9	—10 1 20	—0.6624	.5365	—.1683	—8.9871	.9979
15	*m* Virginis	6	+82	+42	4 40.0	— 5 22 4	+1.2025	.5365	—.1655	—9.1453	.9957
15	94 Virginis	6	+ 3	—71	16 59.9	+ 6 35 14	—0.5453	.5372	—.1578	—9.1572	.9955
15	95 Virginis	6	+25	—41	17 12.7	+ 6 47 39	—0.1204	.5373	—.1572	—9.1787	.9950
15	96 Virginis	6½	+81	+12	18 20.1	+ 7 53 0	+0.8900	.5378	—.1564	—9.2268	.9937
15	κ Virginis	4½	+61	— 9	20 16.4	+ 9 45 45	+0.4658	.5374	—.1549	—9.2246	.9938
16	2 Libræ	6	+79	+49	1 30.2	— 9 10 3	+1.2500	.5380	—.1505	—9.2847	.9918
16	ξ¹ Libræ	6	— 8	—89	16 58.7	+ 5 44 19	—0.6853	.5396	—.1362	—9.2942	.9914
17	*o*² Libræ	6	+76	+36	6 57.7	— 4 37 5	+1.1249	.5414	—.1211	—9.4032	.9856
17	γ Libræ	4½	+30	—31	13 57.3	+ 1 20 4	+0.0596	.5421	—.1138	—9.3940	.9862
17	η Libræ	6	+65	— 1	17 17.1	+ 5 23 0	+0.5891	.5427	—.1088	—9.4199	.9844
18	49 Libræ	5½	+74	+ 8	1 15.2	—10 53 53	+0.7476	.5437	—.0987	—9.4440	.9835
18	φ Ophiuchi	5	+ 3	—59	16 11.7	+ 3 34 29	—0.3752	0.5455	—.0783	—9.4487	9.9821

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
May 18	24 Scorpii	5	+57	− 4	21 13.1	+ 8 26 20	+0.5354	0.5455	−.0712	+9.4777	9.9795
19	B.A.C. 5695	6	−31	−90	4 13.6	− 8 46 32	−0.9143	.5465	−.0609	+9.4556	.9815
19	29 Ophiuchi	6	+72	+55	6 59.4	− 6 5 57	+1.2457	.5466	−.0569	+9.5056	.9765
19	B.A.C. 5771	6½	+ 3	−54	10 6.3	− 3 4 58	−0.3133	.5470	−.0524	+9.4765	.9796
19	B.A.C. 5839	6½	− 1	−59	15 42.7	+ 2 20 44	−0.3797	.5473	−.0435	+9.4808	.9792
20	B.A.C. 6060	6½	+40	−13	9 1.2	− 4 53 55	+0.3851	.5475	−.0168	+9.5075	.9763
21	B.A.C. 6267	6	−22	−90	0 27.4	+10 2 45	−0.6828	.5471	+.0080	+9.4871	.9785
21	B.A.C. 6287	6	+38	−14	1 30.8	+11 4 7	+0.3601	.5471	+.0093	+9.5084	.9762
21	B.A.C. 6292	6	+55	− 1	2 3.7	+11 35 57	+0.5838	.5470	+.0099	+9.5123	.9757
21	B.A.C. 6293	6½	+ 9	−43	2 6.7	+11 38 53	−0.1403	.5470	+.0100	+9.4981	.9773
21	B.A.C. 6294	6	+17	−34	2 7.4	+11 39 35	+0.0128	.5470	+.0100	+9.5013	.9770
22	ρ^1 Sagittarii	4	+36	−19	2 24.2	+11 10 4	+0.2730	.5451	+.0476	+9.4921	.9780
22	ρ^2 Sagittarii	5½	+72	+11	2 28.1	+11 13 50	+0.7832	.5450	+.0477	+9.5026	.9768
22	B.A.C. 6658	6	+72	+28	5 30.0	− 9 50 4	+1.0148	.5445	+.0522	+9.5043	.9767
22	e^1 Sagittarii	6	−29	−90	11 41.1	− 3 50 43	−0.8835	.5440	+.0613	+9.4557	.9815
22	e^2 Sagittarii	5	−38	−90	12 33.8	− 2 59 38	−1.0090	.5439	+.0626	+9.4515	.9819
22	q Sagittarii	5½	−49	−90	20 6.0	+ 4 18 19	−1.1489	.5430	+.0732	+9.4360	.9832
23	B.A.C. 6992	6½	−31	−90	7 16.4	− 8 52 20	−0.9465	.5415	+.0887	+9.4186	.9845
23	β Capricor.	3	−30	−90	7 23.3	− 8 45 42	−0.9397	.5415	+.0891	+9.4184	.9846
23	B.A.C. 7063	6	+14	−47	11 50.0	− 4 27 19	−0.2017	.5411	+.0949	+9.4267	.9839
23	τ^1 Capricor.	6	+41	−20	15 23.9	− 1 0 5	+0.2639	.5410	+.0997	+9.4296	.9837
23	τ^2 Capricor.	5	+34	−26	16 21.0	− 0 4 46	+0.1544	.5406	+.1006	+9.4246	.9841
24	8 Aquarii	6	−17	−90	2 33.4	+ 9 48 32	−0.7863	.5395	+.1136	+9.3701	.9877
24	9 Aquarii	6	+17	−46	3 8.9	+10 22 55	−0.1906	.5394	+.1141	+9.3850	.9868
24	18 Aquarii	6	+62	− 5	14 32.7	− 2 34 34	+0.5288	.5385	+.1275	+9.3664	.9880
25	λ Capricor.	5½	+55	−12	1 37.8	+ 8 9 58	+0.4079	.5382	+.1393	+9.3170	.9905
25	B.A.C. 7620	6	+18	−43	5 8.9	+11 34 30	−0.2270	.5382	+.1426	+9.2780	.9920
25	θ Aquarii	4½	−46	−90	16 40.0	− 1 15 53	−1.2098	.5384	+.1534	+9.1667	.9953
25	B.A.C. 7774	6	+40	−26	16 41.1	− 1 14 45	+0.1490	.5384	+.1534	+9.2264	.9937
25	ρ Aquarii	5½	−20	−90	18 20.2	+ 0 21 15	−0.9049	.5384	+.1547	+9.1689	.9952
26	67 Aquarii	6	+34	−33	5 42.5	+11 22 22	+0.0197	.5395	+.1638	+9.1245	.9961
26	78 Aquarii	6	+82	+43	11 16.9	− 7 13 39	+1.2114	.5403	+.1676	+9.1385	.9958
26	82 Aquarii	6	+83	+42	15 11.7	− 3 26 16	+1.2053	.5407	+.1702	+9.1031	.9965
26	B.A.C. 8094	6	−21	−90	21 34.8	+ 2 44 51	−0.9526	.5420	+.1740	+8.8665	.9988
26	96 Aquarii	5½	+84	+31	23 25.2	+ 4 31 32	+1.0962	.5426	+.1751	+9.0081	.9977
27	B.A.C. 8134	6½	+85	+10	0 23.5	+ 5 28 11	+0.7889	.5430	+.1756	+8.9728	.9981
27	20 Piscium	6	+87	+29	13 14.2	− 6 5 36	+1.0728	.5463	+.1810	+8.7856	.9992
27	B.A.C. 8365	6½	+46	−23	21 25.3	+ 1 49 42	+0.1979	.5493	+.1817	+8.3355	.9999
28	B.A.C. 57	6½	−22	−89	3 26.2	+ 7 38 51	−0.9763	.5516	+.1845	+8.2196	.9999
28	44 Piscium	6	+ 3	−74	7 1.3	+11 6 55	−0.5758	.5530	+.1848	+8.3224	.9999
29	73 Piscium	6½	−28	−85	1 13.1	+ 4 42 20	−1.0554	.5616	+.1836	+8.9352	.9984
29	77 Pisci. *pr.*	7	+23	−47	1 39.2	+ 5 7 31	−0.2154	.5621	+.1836	+8.8646	.9988
29	ε Piscium	5½	− 8	−74	2 49.3	+ 6 15 15	−0.7642	.5627	+.1833	+8.9355	.9984
29	96 Piscium	6½	− 9	−84	12 4.3	− 8 48 46	−0.7718	.5679	+.1801	+9.0609	.9971
29	μ Piscium	4½	+66	− 7	12 33.8	− 8 20 19	+0.4867	.5683	+.1799	+8.9780	.9980
29	B.A.C. 481	6½	+ 2	−73	15 10.1	− 5 49 30	−0.5943	.5698	+.1787	+9.0836	.9968
30	64 Ceti	6½	+90	+35	6 30.3	+ 8 58 3	+1.0995	.5796	+.1687	+9.1406	.9958
30	ξ^1 Ceti	4½	+90	+22	7 11.9	+ 9 38 5	+0.9391	.5798	+.1682	+9.1553	.9955
30	B.A.C. 728	6½	+15	−53	11 31.1	−10 12 7	−0.3574	.5829	+.1643	+9.2494	.9930
30	B.A.C. 741	6½	+90	+17	12 4.0	− 9 40 30	+0.8535	.5832	+.1639	+9.1995	.9945
30	ξ Arietis	5½	+33	−33	12 11.3	− 9 33 26	−0.0236	.5832	+.1638	+9.2399	.9933
30	B.A.C. 755	6	+43	−23	13 0.4	− 8 46 6	+0.1531	.5838	+.1630	+9.2380	.9934
30	31 Arietis	5½	−32	−78	17 6.3	− 4 49 21	−1.0929	.5864	+.1590	+9.3131	.9906
30	B.A.C. 830	6	+90	+28	19 35.0	− 2 26 9	+0.9931	.5883	+.1562	+9.2469	.9931
30	38 Arietis	5	+ 4	−67	20 34.6	− 1 28 46	−0.5601	0.5890	+.1551	+9.3137	9.9906

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
May 31	B.A.C. 987	6½	+59	− 7	7 23.1	+ 8 55 10	+0.3937	0.5961	+.1416	+9.3367	9.9895
June 3	χ² Orionis	5	−42	−71	1 23.7	+ 0 15 3	−1.1561	.6201	+.0134	+9.5275	.9739
3	68 Orionis	6	−58	−70	4 36.2	+ 3 19 31	−1.2491	.6199	+.0062	+9.5301	.9735
3	71 Orionis	5½	− 2	−60	5 40.9	+ 4 21 32	−0.6369	.6197	+.0039	+9.5169	.9752
3	26 Geminor.	5½	+90	+21	16 4.2	− 9 41 7	+0.6790	.6179	−.0196	+9.4846	.9788
4	λ Geminor.	3½	+90	+57	5 39.2	+ 3 20 24	+1.1893	.6131	−.0497	+9.4603	.9811
4	B.A.C. 2432	6½	− 2	−63	7 31.9	+ 5 8 30	−0.6321	.6124	−.0538	+9.5020	.9769
4	*f* Geminor.	6	+ 8	−51	13 52.0	+11 13 12	−0.4700	.6093	−.0667	+9.4893	.9783
4	1 Cancri	6	+90	+25	20 44.3	− 6 11 0	+0.8398	.6055	−.0803	+9.4440	.9826
4	3 Cancri	6	−12	−73	22 12.1	− 4 46 46	−0.7956	.6046	−.0829	+9.4821	.9790
4	5 Cancri	6	+36	−22	22 29.9	− 4 29 37	+0.0243	.6045	−.0838	+9.4614	.9810
5	B.A.C. 2731	6½	−15	−73	1 51.0	− 1 16 28	−0.8484	.6026	−.0890	+9.4757	.9797
5	29 Cancri	6	+90	+50	9 20.2	+ 5 55 10	+1.1754	.5979	−.1030	+9.4028	.9857
5	54 Cancri	6½	−27	−74	18 25.7	− 9 20 13	−1.0247	.5913	−.1181	+9.4361	.9832
6	ξ Leonis	6	+90	+11	11 38.1	+ 7 13 45	+0.7216	.5796	−.1414	+9.3137	.9906
6	18 Leonis	6	− 6	−78	17 50.5	−10 47 16	−0.7208	.5756	−.1485	+9.3326	.9897
6	B.A.C. 3345	6	+12	−55	18 21.2	−10 17 36	−0.4125	.5752	−.1489	+9.3193	.9903
7	A Leonis	5	+14	−53	3 18.0	− 1 39 47	−0.3647	.5694	−.1577	+9.2665	.9925
7	B.A.C. 3538	6½	+15	−53	9 42.3	+ 4 31 12	−0.3522	.5648	−.1631	+9.2234	.9938
7	44 Leonis	6	+13	−56	11 4.7	+ 5 50 45	−0.3996	.5641	−.1641	+9.2159	.9940
7	B.A.C. 3562	6½	+12	−57	11 13.1	+ 5 58 54	−0.4116	.5641	−.1642	+9.2150	.9941
7	48 Leonis	6	+90	+10	15 24.7	+10 1 55	+0.7580	.5613	−.1673	+9.1234	.9961
7	49 Leonis. *pr.*	6	−23	−81	15 30.2	+10 7 11	−0.9908	.5612	−.1673	+9.2092	.9942
7	37 Sextantis	6	+65	− 7	20 34.6	− 8 58 42	+0.4702	.5583	−.1705	+9.0902	.9967
8	*c* Leonis	5	+11	−60	3 21.8	− 2 25 3	−0.4322	.5545	−.1741	+9.0742	.9969
8	τ Leonis	5	+84	+ 3	16 11.4	+ 9 59 21	+0.6680	.5484	−.1787	+8.7961	.9991
8	89 Leonis	6	+29	−40	19 16.4	−11 1 34	−0.1045	.5470	−.1796	+8.8209	.9990
9	β Virginis	3½	+26	−44	3 4.3	− 3 28 32	−0.1602	.5439	−.1808	+8.6416	.9996
9	B.A.C. 4043	6½	+60	−12	7 11.2	+ 0 30 29	+0.4067	.5425	−.1811	+8.3452	9.9999
9	13 Virginis	6	+38	−31	16 47.0	+ 9 48 14	+0.0667	.5395	−.1808	−6.9397	0.0000
9	η Virginis	3½	+25	−45	17 23.8	+10 23 54	−0.1719	.5391	−.1807	+7.0856	.0000
10	γ Virginis *pr.*	2½	−51	−90	4 11.7	− 3 8 12	−1.2756	.5369	−.1790	−8.1005	0.0000
10	B.A.C. 4277	6	−58	−90	5 7.6	− 2 14 4	−1.3119	.5365	−.1788	−8.1684	9.9999
10	38 Virginis	6	+32	−37	9 54.2	+ 2 23 47	−0.0380	.5358	−.1774	−8.6038	.9995
10	*k* Virginis	6	+16	−54	13 7.1	+ 5 30 46	−0.3252	.5352	−.1763	−8.7323	.9994
10	46 Virginis	6½	−16	−90	13 35.4	+ 5 58 10	−0.8814	.5352	−.1762	−8.6655	.9995
10	48 Virginis	6	−14	−90	15 14.5	+ 7 34 18	−0.8568	.5351	−.1756	−8.7112	.9994
10	θ Virginis *tr.*	4½	+79	+ 1	18 15.3	+10 29 33	+0.6383	.5346	−.1744	−8.9253	.9984
11	65 Virginis	6	−39	−90	0 57.8	− 7 0 10	−1.1700	.5341	−.1714	−8.8677	.9988
11	66 Virginis	6	−26	−90	1 34.3	− 6 24 50	−1.0153	.5341	−.1710	−8.8917	.9988
11	*f* Virginis	5	+ 8	−64	5 18.3	− 2 47 35	−0.4629	.5338	−.1709	−8.9870	.9979
11	94 Virginis	6	+12	−58	22 32.2	−10 5 6	−0.3761	.5339	−.1581	−9.1572	.9955
11	95 Virginis	6	+35	−32	22 45.1	− 9 52 35	+0.0485	.5340	−.1580	−9.1787	.9950
11	96 Virginis	6½	+81	+23	23 52.5	− 8 47 17	+0.9888	.5342	−.1572	−9.2268	.9937
12	κ Virginis	4½	+75	0	1 50.1	− 6 53 10	+0.6294	.5342	−.1557	−9.2246	.9938
12	ξ¹ Libræ	6	− 1	−73	22 36.4	−10 44 50	−0.5644	.5364	−.1374	−9.2942	.9914
12	ξ² Libræ	6	−56	−90	23 18.2	− 9 35 14	−1.2583	.5367	−.1363	−9.2756	.9921
13	ο² Libræ	6	+76	+47	12 48.0	+ 3 0 40	+1.2201	.5384	−.1225	−9.4032	.9856
13	γ Libræ	4½	+35	−27	18 59.5	+ 9 0 38	+0.1384	.5393	−.1154	−9.3940	.9862
13	η Libræ	6	+71	+ 3	23 12.1	−10 54 33	+0.6596	.5399	−.1104	−9.4199	.9844
14	49 Libræ	5½	+74	+12	7 13.4	− 3 8 9	+0.8008	.5414	−.1004	−9.4440	.9825
14	φ Ophiuchi	5	+ 4	−57	22 15.2	+11 25 25	−0.3576	.5314	−.0803	−9.4488	.9821
15	24 Scorpii	5	+58	− 4	3 18.0	− 7 41 20	+0.5435	.5446	−.0732	−9.4777	.9795
15	B.A.C. 5695	6	−32	−90	10 20.1	− 0 52 33	−0.9241	.5455	−.0631	−9.4556	.9815
15	29 Ophiuchi	6	+72	+53	13 6.5	+ 1 48 35	+1.2328	0.5460	−.0589	−9.5056	9.9765

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
June 15	B.A.C. 5771	6½	+ 2	—56	16 13.9	+ 4 50 4	—0.3355	0.5463	—.0543	—9.4765	9.9796
15	B.A.C. 5839	6½	— 3	—62	21 51.1	+10 16 34	—0.4144	.5468	—.0457	—9.4808	.9792
16	B.A.C. 6060	6½	+36	—17	15 10.5	+ 3 2 50	+0.3138	.5481	—.0190	—9.5076	.9763
17	B.A.C. 6267	6	—29	—90	6 36.0	— 6 1 12	—0.7876	.5483	+.0055	—9.4871	.9785
17	B.A C. 6287	6	+31	—20	7 39.3	— 4 59 57	+0.2540	.5482	+.0072	—9.5084	.9762
17	B.A.C. 6292	6	+45	— 8	8 12.1	— 4 28 12	+0.4592	.5482	+.0078	—9.5124	.9757
17	B A.C 6293	6½	+ 2	—50	8 15.1	— 4 25 15	—0.2510	.5481	+.0079	—9.4981	.9773
17	B A.C. 6294	6	+11	—40	8 15.8	— 4 24 33	—0.0948	.5481	+.0079	—9.5012	.9770
18	*d* Sagittarii	5	+71	+55	6 30.6	— 6 52 19	+1.2422	.5468	+.0428	—9.5167	.9752
18	ϱ^1 Sagittarii	4	+26	—28	8 29.5	— 4 57 12	+0.1173	.5466	+.0459	—9.4291	.9780
18	ϱ^2 Sagittarii	5½	+62	+ 1	8 33.4	— 4 53 27	+0.6279	.5466	+.0460	—9.5026	.9768
18	B A.C. 6658	6	+72	+16	11 34.8	— 1 57 46	+0.8547	.5465	+.0505	—9.5643	.9766
18	e^1 Sagittarii	6	—42	—90	17 45.4	+ 4 1 5	—1.0580	.5456	+.0597	—9.4557	.9815
18	κ^2 Sagittarii	5	—55	—90	18 37.7	+ 4 51 42	—1.1858	.5455	+.0610	—9.4514	.9819
19	B.A.C. 6992	6½	—48	—90	13 18.8	— 1 2 33	—1.1558	.5429	+.0872	—9.4186	.9845
19	β Capricor.	3	—48	—90	13 25.6	— 0 55 55	—1.1495	.5428	+.0877	—9.4184	.9846
19	B A.C. 7063	6	+ 2	—62	17 52.3	+ 3 22 26	—0.4166	.5421	+.0936	—9.4267	.9839
19	τ^1 Capricor.	6	+28	—32	21 26.3	+ 6 49 44	+0.0448	.5415	+.0984	—9.4296	.9837
19	τ^2 Capricor.	5	+22	—38	22 23.5	+ 7 45 6	—0.0662	.5415	+.0997	—9.4246	.9841
20	8 Aquarii	6	—34	—90	8 36.9	— 6 20 32	—1.0259	.5399	+.1123	—9.3670	.9877
20	9 Aquarii	6	+ 3	—62	9 12.5	— 5 46 4	—0.4281	.5399	+.1128	—9.3849	.9868
20	18 Aquarii	6	+45	—19	20 39.0	+ 5 19 8	+0.2803	.5382	+.1262	—9.3663	.9880
21	λ Capricor.	5½	+38	—26	5 48.5	— 9 51 55	+0.1469	.5369	+.1379	—9.3169	.9904
21	B.A.C. 7620	6	+ 3	—67	11 21.4	— 4 25 35	—0.4954	.5367	+.1412	—9.2779	.9920
21	B.A.C. 7774	6	+24	—42	23 0.8	+ 6 52 27	—0.1265	.5358	+.1519	—9.2265	.9937
22	ρ Aquarii	5½	—44	—90	0 41.2	+ 8 29 41	—1.1901	.5358	+.1534	—9.1688	.9952
22	67 Aquarii	6	+18	—50	12 13.3	— 4 19 21	—0.2641	.5357	+.1621	—9.1244	.9961
22	λ Aquarii	4	+82	+40	16 54.3	+ 0 13 4	+1.1809	.5358	+.1653	—9.1585	.9954
22	78 Aquarii	6	+82	+19	17 53.4	+ 1 10 19	+0.9373	.5358	+.1660	—9.1384	.9958
22	82 Aquarii	6	+83	+19	21 52.5	+ 5 2 4	+0.9313	.5360	+.1685	—9.1030	.9965
23	B A C. 8094	6	—49	—90	4 23.3	+11 20 52	—1.2508	.5368	+.1720	—8.8664	.9988
23	96 Aquarii	5½	+84	+12	6 16.0	—10 49 56	+0.8207	.5369	+.1730	—9.0080	.9977
23	B.A.C. 8134	6½	+67	— 7	7 15.6	— 9 52 11	+0.5098	.5369	+.1735	—8.9733	.9981
23	20 Piscium	6	+87	+11	20 24.4	+ 2 52 13	+0.8006	.5394	+.1790	—8.7854	.9992
24	B.A.C. 8365	6½	+30	—39	4 48.4	+11 0 29	—0.0823	.5415	+.1812	—8.3350	.9999
24	B.A.C. 57	6½	— 6	—85	10 59.4	— 7 0 14	—0.7369	.5434	+.1823	+8.2202	.9999
24	44 Piscium	6	—14	—89	14 40.7	— 3 25 55	—0.8592	.5446	+.1826	+8.3230	.9099
25	73 Piscium	6½	—62	—85	9 26.2	— 9 16 46	—1.3271	.5525	+.1816	+8.9353	.9984
25	77 Pisci. *pr.*	7	+ 9	—64	9 53.1	— 8 50 47	—0.4745	.5526	+.1815	+8.8648	.9988
25	ε Piscium	5½	—26	—85	11 5.4	— 6 40 48	—1.0294	.5531	+.1812	+8.9356	.9984
25	B.A.C. 408	6½	+90	+33	17 44.8	— 1 14 38	+1.1061	.5550	+.1793	+8.8482	.9989
25	96 Piscium	6½	—26	—84	20 38.4	+ 1 33 8	—1.0238	.5581	+.1782	+9.0610	.9971
25	μ Piscium	4½	+50	—20	21 8.8	+ 2 2 31	+0.2530	.5582	+.1780	+8.9782	.9980
25	B.A.C. 481	6½	—12	—83	23 50.2	+ 4 38 29	—0.8220	.5600	+.1769	+9.0837	.9968
26	64 Ceti	6½	+90	+20	15 40.0	— 4 4 24	+0.9051	.5698	+.1675	+9.1406	.9958
26	ξ^1 Ceti	4½	+90	+10	16 22.8	— 3 23 5	+0.7439	.5704	+.1669	+9.1553	.9955
26	B.A.C. 728	6½	+ 4	—68	20 50.1	+ 0 54 50	—0.5612	.5731	+.1633	+9.2494	.9930
26	B.A.C. 741	6½	+84	+ 5	21 23.9	+ 1 27 27	+0.6663	.5737	+.1628	+9.1995	.9945
26	ξ Arietis	5½	+22	—44	21 31.5	+ 1 34 45	—0.2218	.5736	+.1627	+9.2399	.9933
26	B.A.C. 755	6	+32	—34	22 22.1	+ 2 23 34	—0.0412	.5744	+.1620	+9.2381	.9934
27	31 Arietis	5½	—58	—78	2 35.3	+ 6 27 44	—1.2942	.5772	+.1582	+9.3132	.9906
27	B A.C. 830	6	+90	+16	5 8.4	+ 8 55 18	+0.8226	.5786	+.1557	+9.2470	.9931
27	38 Arietis	5	— 7	—76	6 9.8	+ 9 54 27	—0.7471	.5794	+.1547	+9.3137	.9906
27	B.A.C. 987	6½	+49	—16	17 16.2	— 3 23 41	+0.2420	.5872	+.1419	+9.3367	.9895
28	Wei III.1085	8½	+90	+22	14 39.3	— 6 49 44	+0.8354	0.6019	+.1099	+9.4032	9.9856

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
June 28	Lal. 7671	8	−51	−73	16 21.5	− 5 11 30	−1.2385	0.6028	+.1073	+9.4644	9.9807
28	Lal. 7677	8	−50	−73	16 25.8	− 5 7 27	−1.2297	.6031	+.1067	+9.4644	.9807
28	Lal. 7702	9½	−32	−73	16 38.9	− 4 54 47	−1.0787	.6032	+.1064	+9.4611	.9810
28	Weis. IV. 24	9	+90	+26	17 12.3	− 4 22 43	+0.8835	.6033	+.1058	+9.4097	.9852
28	Lal. 7753	7½	+46	−15	17 16.9	− 4 18 20	+0.1881	.6034	+.1056	+9.4296	.9837
28	B.A.C. 1281	7	+ 6	−56	17 19.4	− 4 15 54	−0.5015	.6034	+.1056	+9.4481	.9821
28	Rumk. 1103	7	+70	+ 3	17 23.2	− 4 12 19	+0.5144	.6038	+.1051	+9.4208	.9844
28	Rumk. 1108	9	+90	+59	17 48.3	− 3 48 8	+1.2411	.6040	+.1045	+9.4012	.9858
28	Rumk. 1110		−32	−73	17 53.0	− 3 43 42	−1.0703	.6041	+.1044	+9.4643	.9808
28	48 Tauri	6	+90	+28	19 11.6	− 2 28 8	+0.9137	.6049	+.1022	+9.4148	.9848
28	Rumk. 1136	6	+43	−17	19 35.6	− 2 5 6	+0.1454	.6050	+.1012	+9.4372	.9831
28	γ Tauri	4	+90	+23	20 45.9	− 0 57 36	+0.8350	.6057	+.0992	+9.4214	.9843
28	55 Tauri	7	+32	−27	20 47.7	− 0 55 51	−0.0480	.6057	+.0991	+9.4456	.9824
28	Rumk. 1161		−29	−73	21 22.8	− 0 22 11	−1.0359	.6062	+.0978	+9.4723	.9800
28	Rumk. 1163	8	+19	−40	21 25.8	− 0 19 19	−0.2698	.6062	+.0978	+9.4530	.9818
28	δ¹ Tauri	4	−22	−73	21 57.3	+ 0 10 57	−0.9499	.6065	+.0971	+9.4715	.9801
28	63 Tauri	6	+25	−34	22 9.5	+ 0 22 42	−0.1766	.6066	+.0968	+9.4525	.9818
28	B.A.C. 1351	6½	+33	−26	22 10.9	+ 0 24 3	−0.0279	.6066	+.0968	+9.4486	.9821
28	δ² Tauri	6	−12	−73	22 24.6	+ 0 37 7	−0.8125	.6068	+.0963	+9.4692	.9803
28	Lal. 8249	7½	+10	−51	22 31.2	+ 0 43 31	−0.4429	.6069	+.0958	+9.4601	.9811
28	Lal. 8256	8	+21	−38	22 33.6	+ 0 45 50	−0.2472	.6069	+.0958	+9.4552	.9816
28	δ³ Tauri	5	−53	−73	22 56.6	+ 1 7 55	−1.2437	.6069	+.0952	+9.4810	.9791
28	70 Tauri	7	+90	+17	23 2.1	+ 1 13 12	+0.7284	.6070	+.0950	+9.4305	.9836
28	Lal. 8311	8	+90	+49	23 13.4	+ 1 24 2	+1.1545	.6071	+.0947	+9.4191	.9845
28	Rumk. 1188	6½	+90	+49	23 13.6	+ 1 24 12	+1.1558	.6071	+.0947	+9.4191	.9845
28	Rumk. 1189		+26	−32	23 19.3	+ 1 29 38	−0.1486	.6072	+.0945	+9.4546	.9817
28	71 Tauri	6	+90	+41	23 19.4	+ 1 29 44	+1.0720	.6072	+.0945	+9.4217	.9843
28	Rumk. 1192		+10	−51	23 22.0	+ 1 32 13	−0.4415	.6072	+.0944	+9.4621	.9809
28	Rumk. 1198	6	+90	+53	23 36.9	+ 1 46 36	+1.1932	.6074	+.0940	+9.4191	.9845
28	Rumk. 1200		+90	+48	23 48.6	+ 1 57 46	+1.1424	.6076	+.0936	+9.4209	.9844
29	Rumk. 1203		+65	+ 2	0 5.4	+ 2 13 57	+0.4641	.6076	+.0932	+9.4403	.9828
29	75 Tauri	6	+61	− 1	0 7.8	+ 2 16 14	+0.4108	.6076	+.0931	+9.4419	.9827
29	θ¹ Tauri	4½	+90	+22	0 11.0	+ 2 19 17	+0.8059	.6076	+.0930	+9.4312	.9836
29	θ² Tauri	4½	+90	+28	0 13.2	+ 2 21 25	+0.8995	.6076	+.0930	+9.4288	.9838
29	Rumk. 1212	6	− 7	−72	0 27.0	+ 2 34 37	−0.7345	.6078	+.0922	+9.4726	.9800
29	Rumk. 1214		−30	−73	0 30.3	+ 2 37 52	−1.0430	.6079	+.0921	+9.4797	.9793
29	Rumk. 1215	7	−32	−73	0 30.9	+ 2 38 22	−1.0725	.6079	+.0921	+9.4804	.9792
29	80 Tauri *pr.*	6	+90	+52	0 48.0	+ 2 54 50	+1.1784	.6081	+.0917	+9.4225	.9843
29	B.A.C. 1391	5	+83	+12	0 57.0	+ 3 3 28	+0.6419	.6083	+.0915	+9.4377	.9831
29	81 Tauri	5½	+90	+48	0 59.8	+ 3 6 10	+1.1413	.6083	+.0914	+9.4242	.9841
29	B.A.C. 1394	7	+90	+15	1 2.3	+ 3 8 31	+0.6891	.6083	+.0913	+9.4366	.9832
29	Rumk. 1227	7	+90	+39	1 16.2	+ 3 21 54	+1.0418	.6084	+.0910	+9.4276	.9839
29	85 Tauri	6	+90	+37	1 27.8	+ 3 32 59	+1.0226	.6084	+.0902	+9.4285	.9838
29	Rumk. 1232		+53	− 7	1 39.0	+ 3 43 44	+0.3003	.6085	+.0900	+9.4484	.9822
29	Rumk. 1233		−21	−73	1 44.5	+ 3 49 4	−0.9376	.6086	+.0896	+9.4799	.9793
29	Rumk. 1235		+90	+28	1 50.1	+ 3 54 23	+0.9005	.6084	+.0897	+9.4328	.9835
29	B.A.C. 1406	7	+80	+11	2 8.8	+ 4 12 21	+0.6128	.6087	+.0893	+9.4413	.9827
29	Rumk. 1238	10	+65	+ 2	2 27.8	+ 4 30 35	+0.4546	.6091	+.0883	+9.4463	.9824
29	Lal. 8599	9	− 9	−73	2 31.5	+ 4 34 9	−0.7647	.6091	+.0882	+9.4773	.9795
29	Lal. 8610	8	+34	−24	2 39.0	+ 4 41 24	−0.0135	.6091	+.0881	+9.4588	.9812
29	Lal. 8613	8	+23	−35	2 40.2	+ 4 42 33	−0.2112	.6091	+.0880	+9.4640	.9808
29	α Tauri	1	+68	+ 4	3 1.5	+ 5 2 54	+0.4943	.6093	+.0875	+9.4466	.9823
29	89 Tauri	7	+90	+39	3 53.9	+ 5 53 17	+1.0382	.6097	+.0858	+9.4340	.9834
29	σ² Tauri	5½	+90	+53	4 19.9	+ 6 18 14	+1.1863	.6101	+.0852	+9.4310	.9836
29	Rumk. 1241		+79	+11	4 33.7	+ 6 31 26	+0.6081	0.6104	+.0843	+9.4470	9.9823

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
June 29	Rumk. 1243	8	+82	+12	4 45.6	+ 6 42 54	+0.6305	0.6104	+.0840	+9.4469	9.9823
29	Rumk. 1246	7	+22	−36	5 10.8	+ 7 7 4	−0.2219	.6104	+.0834	+9.4696	.9802
29	Rumk. 1247		+67	+ 3	5 11.1	+ 7 7 22	+0.4737	.6104	+.0834	+9.4519	.9819
29	Rumk. 1254		+70	+ 6	5 25.8	+ 7 21 28	+0.5162	.6107	+.0825	+9.4513	.9819
29	Rumk. 1255		+90	+57	5 26.9	+ 7 22 31	+1.2184	.6107	+.0825	+9.4326	.9835
29	Lal. 8852	9½	+30	−27	5 44.0	+ 7 38 51	−0.0827	.6107	+.0821	+9.4673	.9805
29	Rumk. 1263	9½	+90	+55	6 19.1	+ 8 12 35	+1.1956	.6111	+.0812	+9.4352	.9833
29	Rumk. 1276		−38	−72	7 18.2	+ 9 9 14	−1.1259	.6115	+.0792	+9.4956	.9776
29	Rumk. 1283	7	+90	+19	7 56.1	+ 9 45 41	+0.7410	.6116	+.0778	+9.4507	.9820
29	Rumk. 1294		+90	+58	8 45.6	+10 33 5	+1.2184	.6123	+.0760	+9.4397	.9829
29	Rumk. 1299	7½	+23	−34	9 8.1	+10 54 42	−0.2131	.6123	+.0755	+9.4771	.9795
29	Rumk. 1300		+26	−31	9 10.3	+10 56 46	−0.1585	.6124	+.0754	+9.4759	.9797
29	Rumk. 1302	7	−56	−72	9 11.6	+10 58 3	−1.2514	.6124	+.0754	+9.5020	.9769
29	B.A.C. 1526	6	+64	+ 3	11 15.6	−11 2 59	+0.4530	.6133	+.0712	+9.4645	.9808
29	m Tauri	5½	−11	−72	15 2.2	− 7 25 42	−0.7876	.6150	+.0632	+9.5005	.9771
July 2	B.A.C. 2731	6½	− 6	−72	11 50.2	+10 30 48	−0.7088	.6109	−.0890	+9.4757	.9797
3	54 Cancri	6½	−14	−74	3 57.9	+ 2 0 0	−0.8455	.6015	−.1179	+9.4360	.9832
3	υ¹ Cancri	6	−37	−74	6 26.6	+ 4 22 53	−1.1334	.5997	−.1220	+9.4357	.9832
3	ξ Leonis	6	+90	+23	20 38.4	− 5 57 56	+0.9110	.5901	−.1424	+9.3137	.9906
4	18 Leonis	6	+ 7	−61	2 38.8	− 0 11 3	−0.5005	.5857	−.1498	+9.3326	.9897
4	B A.C. 3345	6	+24	−41	3 8.5	+ 0 17 36	−0.1957	.5855	−.1502	+9.3194	.9904
4	A Leonis	5	+27	−39	11 47.7	+ 8 37 48	−0.1344	.5792	−.1594	+9.2665	.9925
4	B.A.C. 3538	6½	+28	−38	17 59.4	− 9 23 54	−0.1132	.5750	−.1648	+9.2234	.9939
4	44 Leonis	6	+26	−41	19 18.2	− 8 7 57	−0.1557	.5744	−.1659	+9.2157	.9941
4	B.A.C. 3562	6½	+25	−41	19 27.3	− 7 59 11	−0.1696	.5740	−.1662	+9.2152	.9941
4	45 Leonis	6	−66	−80	20 20.5	− 7 7 52	−1.3216	.5737	−.1668	+9.2580	.9928
4	ρ Leonis	4	−48	−80	22 36.6	− 4 56 35	−1.2485	.5719	−.1686	+9.2392	.9934
4	48 Leonis	6	+90	+26	23 30.7	− 4 4 23	+0.9883	.5712	−.1693	+9.1234	.9962
4	49 Leonis	6	− 6	−80	23 36.7	− 3 58 30	−0.7347	.5699	−.1699	+9.2092	.9942
5	37 Sextantis	6	+90	+ 7	4 30.5	+ 0 45 0	+0.7109	.5679	−.1726	+9.0903	.9967
5	c Leonis	5	+25	−43	11 5.0	+ 7 5 49	−0.1715	.5642	−.1763	+9.0742	.9969
5	τ Leonis	5	+90	+19	23 31.4	− 4 52 59	+0.9264	.5564	−.1810	+8.7962	.9991
6	89 Leonis	6	+44	−25	2 31.2	− 1 59 8	+0.1639	.5550	−.1818	+8.8209	.9990
6	β Virginis	3½	+41	−28	10 6.3	+ 5 21 0	+0.1129	.5514	−.1830	+8.6417	.9996
6	B.A.C. 4043	6½	+85	+ 3	14 6.7	+ 9 13 37	+0.6744	.5497	−.1833	+8.3453	.9999
6	13 Virginis	6	+55	−16	23 28.6	− 5 42 35	+0.3406	.5455	−.1829	−6.9335	0.0000
7	η Virginis	3½	+41	−29	0 4.6	− 5 7 44	+0.1048	.5454	−.1829	+7.0921	0.0000
7	γ Virginis *pr.*	2½	−23	−90	10 38.9	+ 5 6 29	−0.9879	.5416	−.1809	−8.1000	0.0000
7	B.A C. 4277	6	−26	−90	11 33.7	+ 5 59 32	−1.0242	.5414	−.1806	−8.1681	0.0000
7	38 Virginis	6	+48	−22	16 15.0	+10 32 6	+0.2353	.5401	−.1793	−8.6937	.9995
7	k Virginis	6	+32	−37	19 24.6	−10 24 15	−0.0502	.5394	−.1781	−8.7322	.9994
7	46 Virginis	6½	+ 1	−76	19 52.4	− 9 57 19	−0.6014	.5393	−.1780	−8.6655	.9995
7	48 Virginis	6	+ 2	−74	21 29.9	− 8 22 49	−0.5777	.5388	−.1773	−8.7112	.9994
8	θ Virginis *tr.*	4½	+85	+17	0 27.9	− 5 30 25	+0.9022	.5380	−.1760	−8.9253	.9984
8	65 Virginis	6	−17	−90	7 4.7	+ 0 54 10	−0.8943	.5369	−.1730	−8.8678	.9988
8	66 Virginis	6	− 8	−90	7 40.7	+ 1 29 1	−0.7413	.5367	−.1726	−8.8916	.9987
8	l² Virginis	5	+23	−46	11 22.0	+ 5 3 30	−0.1962	.5362	−.1706	−8.9870	.9979
9	94 Virginis	6	+25	−42	4 26.2	− 2 23 39	−0.1259	.5348	−.1594	−9.1572	.9955
9	95 Virginis	6	+50	−18	4 39.0	− 2 11 15	+0.2959	.5348	−.1593	−9.1786	.9950
9	96 Virginis	6½	+81	+46	5 46.5	− 1 5 54	+1.2283	.5348	−.1584	−9.2268	.9937
9	κ Virginis	4½	+81	+15	7 42.9	+ 0 46 58	+0.8702	.5348	−.1569	−9.2246	.9938
10	ξ¹ Libræ	6	+11	−56	4 24.8	− 3 9 6	−0.3439	.5353	−.1385	−9.2942	.9914
10	ξ² Libræ	6	−32	−90	5 36.5	− 1 59 32	−1.0373	.5355	−.1374	−9.2756	.9921
11	γ Libræ	4½	+47	−16	0 48.4	− 7 23 3	+0.3246	.5422	−.1166	−9.3940	.9862
11	η Libræ	6	+75	+14	5 1.6	− 3 17 41	+0.8379	0.5383	−.1117	−9.4199	9.9844

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
July 11	49 Libræ	5½	+74	+23	13 4.2	+ 4 30 3	+0.9647	0.5394	−.1023	−9.4440	9.9825
12	φ Ophiuchi	5	+11	−48	4 9.1	− 4 53 21	−0.2199	.5419	−.0819	−9.4487	.9821
12	24 Scorpii	5	+69	+ 4	9 12.9	+ 0 1 0	+0.6713	.5427	−.0749	−9.4777	.9795
12	B.A.C. 5771	6½	+ 8	−48	22 11.5	−11 24 57	−0.2329	.5447	−.0561	−9.4765	.9796
13	B.A.C. 5839	6½	+ 2	−55	3 49.7	− 5 57 25	−0.3230	.5451	−.0476	−9.4808	.9791
13	B.A.C. 6060	6½	+39	−14	21 11.3	+10 51 6	+0.3701	.5474	−.0195	−9.5076	.9763
14	B.A.C. 6267	6	−27	−90	12 36.9	+ 1 47 7	−0.7635	.5483	+.0034	−9.4870	.9785
14	B.A.C. 6287	6	+32	−19	13 40.1	+ 2 48 21	+0.2754	.5483	+.0051	−9.5083	.9762
14	B.A.C. 6292	6	+46	− 7	14 12.9	+ 3 20 6	+0.4795	.5483	+.0057	−9.5123	.9757
14	B.A.C. 6293	6½	+ 3	−49	14 15.9	+ 3 23 1	−0.2306	.5483	+.0058	−9.4980	.9773
14	B.A.C. 6294	6	+12	−39	14 16.6	+ 3 23 41	−0.0744	.5483	+.0058	−9.5012	.9770
15	*d* Sagittarii	5	+71	+50	12 29.5	+ 0 53 59	+1.2162	.5480	+.0409	−9.5166	.9752
15	ρ¹ Sagittarii	4	+25	−30	14 28.0	+ 2 48 41	+0.0862	.5480	+.0439	−9.4921	.9780
15	ρ² Sagittarii	5½	+59	0	14 31.9	+ 2 52 27	+0.5981	.5480	+.0440	−9.5026	.9768
15	B.A.C. 6658	6	+72	+13	17 32.7	+ 5 47 29	+0.8183	.5478	+.0486	−9.5042	.9766
15	*e*¹ Sagittarii	6	−47	−90	23 41.5	+11 44 33	−1.1054	.5474	+.0579	−9.4557	.9815
16	*e*² Sagittarii	5	−61	−90	0 33.9	−11 24 44	−1.2345	.5473	+.0592	−9.4515	.9819
16	B.A.C. 6992	6½	−60	−90	19 9.3	+ 6 35 23	−1.2414	.5451	+.0858	−9.4165	.9845
16	β Capricor.	3	−59	−90	19 16.1	+ 6 42 0	−1.2351	.5451	+.0859	−9.4184	.9845
16	B.A.C. 7063	6	− 3	−69	23 41.3	+10 58 49	−0.5112	.5446	+.0921	−9.4267	.9839
17	τ¹ Capricor.	6	+22	−38	3 14.1	− 9 35 8	−0.0570	.5441	+.0967	−9.4296	.9837
17	τ² Capricor.	5	+16	−45	4 10.9	− 8 40 7	−0.1697	.5440	+.0979	−9.4245	.9841
17	B.A.C. 7145	6½	+74	+44	4 47.9	− 8 4 10	+1.1877	.5439	+.0989	−9.4556	.9815
17	8 Aquarii	6	−45	−90	14 20.7	+ 1 10 35	−1.1476	.5426	+.1109	−9.3701	.9877
17	9 Aquarii	6	− 4	−73	14 56.1	+ 1 44 53	−0.5516	.5424	+.1117	−9.3849	.9868
18	18 Aquarii	6	+36	−27	2 18.6	−11 13 49	+0.1368	.5409	+.1250	−9.3663	.9879
18	λ Capricor.	5½	+29	−36	13 24.9	− 0 28 9	−0.0149	.5401	+.1373	−9.3169	.9904
18	B.A.C. 7620	6	− 7	−85	16 56.9	+ 2 57 21	−0.6639	.5393	+.1405	−9.2779	.9920
19	*e*¹ Aquarii	6	+79	+36	1 22.4	+11 7 15	+1.1400	.5379	+.1483	−9.2985	.9912
19	B.A.C. 7774	6	+14	−54	4 34.4	− 9 46 42	−0.3112	.5377	+.1511	−9.2264	.9937
19	67 Aquarii	6	+ 7	−65	17 46.3	+ 3 0 57	−0.4669	.5368	+.1613	−9.1244	.9961
19	λ Aquarii	4	+82	+22	22 27.7	+ 7 33 43	+0.9777	.5365	+.1645	−9.1584	.9954
19	78 Aquarii	6	+82	+ 6	23 26.8	+ 8 31 4	+0.7321	.5365	+.1652	−9.1583	.9958
20	81 Aquarii	6	+82	+37	2 51.9	+11 49 55	+1.1513	.5364	+.1672	−9.1308	.9960
20	82 Aquarii	6	+83	+ 6	3 26.5	−11 36 34	+0.7223	.5364	+.1676	−9.1029	.9965
20	φ Aquarii	4½	+84	+37	9 20.2	− 5 53 39	+1.1556	.5364	+.1706	−9.0708	.9970
20	96 Aquarii	5½	+75	− 1	11 52.1	− 3 26 26	+0.6034	.5366	+.1720	−9.0079	.9977
20	B.A.C. 8134	6½	+51	−19	12 52.0	− 2 28 22	+0.2903	.5367	+.1725	−8.9732	.9981
21	20 Piscium	6	+73	− 3	2 7.0	+10 22 11	+0.5735	.5375	+.1776	−8.7852	.9992
21	B.A.C. 8365	6½	+17	−54	10 36.6	− 5 23 55	−0.3198	.5389	+.1798	−8.3345	.9999
21	44 Piscium	6	−32	−89	20 37.4	+ 4 18 11	−1.1076	.5410	+.1811	+8.3234	.9999
21	10 Ceti	6	+89	+33	21 13.2	+ 4 52 50	+1.1110	.5410	+.1811	−8.1356	.9999
22	77 Pisci. *pr.*	7	− 6	−86	16 12.0	− 0 44 24	−0.7213	.5466	+.1796	+8.8649	.9988
22	*e* Piscium	5½	−52	−85	17 26.0	+ 0 27 12	−1.2829	.5473	+.1793	+8.9358	.9984
23	B.A.C. 408	6½	+90	+16	0 15.0	+ 7 3 1	+0.8806	.5499	+.1774	+8.8484	.9989
23	96 Piscium	6½	−51	−84	3 13.0	+ 9 55 12	−1.2753	.5511	+.1762	+9.0611	.9971
23	μ Piscium	4½	+36	−33	3 44.2	+10 25 26	+0.0182	.5513	+.1760	+8.9783	.9980
23	B.A.C. 481	6½	−29	−83	6 29.8	−10 54 20	−1.0695	.5527	+.1748	+9.0838	.9968
23	64 Ceti	6½	+88	+ 6	22 47.2	+ 4 50 30	+0.6915	.5609	+.1655	+9.1408	.9958
23	ξ¹ Ceti	4½	+70	− 3	23 31.4	+ 5 33 9	+0.5288	.5614	+.1649	+9.1554	.9955
24	B.A.C. 728	6½	−10	−80	4 7.2	+ 9 59 31	−0.7916	.5636	+.1614	+9.2495	.9930
24	B.A.C. 741	6½	+64	− 7	4 42.1	+10 33 14	+0.4549	.5642	+.1610	+9.1966	.9945
24	ξ Arietis	5½	+10	−59	4 49.9	+10 40 48	−0.4464	.5642	+.1608	+9.2400	.9933
24	B.A.C. 755	6	+20	−47	5 42.2	+11 31 17	−0.2623	.5648	+.1601	+9.2381	.9934
24	B.A.C. 830	6	+79	+ 4	12 41.9	− 5 43 34	+0.6219	0.5690	+.1538	+9.2470	9.9931

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
July 24	38 Arietis	5	−22	−78	13 45.3	− 4 42 22	−0.9710	0.5695	+.1528	+9.3137	9.9906
25	B.A.C. 987	6½	+37	−26	1 14.5	+ 6 22 23	+0.0464	.5780	+.1394	+9.3368	.9895
25	*f* Tauri	4	+90	+54	9 33.0	− 9 37 15	+1.2320	.5824	+.1297	+9.3346	.9896
25	Wei.III.1085	8½	+89	+12	23 22.4	+ 3 41 16	+0.6809	.5913	+.1092	+9.4032	.9856
26	Weis. IV. 24	9	+90	+16	2 0.7	+ 6 13 35	+0.7343	.5928	+.1052	+9.4098	.9852
26	Lal. 7753	7½	+36	−23	2 5.5	+ 6 18 8	+0.0284	.5928	+.1052	+9.4295	.9837
26	B.A C. 1281	7	− 4	−71	2 8.1	+ 6 20 37	−0.6714	.5928	+.1051	+9.4481	.9822
26	Rumk. 1103	7	+57	− 5	2 11.9	+ 6 24 20	+0.3598	.5928	+.1050	+9.4208	.9844
26	Rumk. 1108	9	+90	+43	2 41.2	+ 6 52 30	+1.1031	.5932	+.1039	+9.4012	.9858
26	Rumk. 1110		−53	−73	2 42.7	+ 6 53 57	−1.2474	.5933	+.1039	+9.4643	.9808
26	Rumk. 1123	8½	+90	+55	3 25.1	+ 7 34 40	+1.2145	.5937	+.1027	+9.4002	.9858
26	48 Tauri	6	+90	+18	4 4.1	+ 8 12 14	+0.7679	.5943	+.1018	+9.4149	.9848
26	Rumk. 1136	6	+34	−25	4 28.9	+ 8 36 4	−0.0110	.5945	+.1009	+9.4372	.9631
26	γ Tauri	4	+90	+14	5 41.6	+ 9 45 57	+0.6907	.5951	+.0989	+9.4214	.9843
26	55 Tauri	7	+23	−36	5 43.4	+ 9 47 46	−0.2052	.5951	+.0989	+9.4456	.9824
26	58 Tauri	6	+90	+62	6 1.9	+10 5 32	+1.2563	.5953	+.0985	+9.4064	.9854
26	Rumk. 1161		−47	−73	6 19.7	+10 22 36	−1.2664	.5954	+.0980	+9.4722	.9800
26	Rumk. 1163	8	+10	−51	6 22.8	+10 25 35	−0.4291	.5955	+.0977	+9.4530	.9818
26	δ¹ Tauri	4	−36	−73	6 55.4	+10 56 55	−1.1181	.5958	+.0969	+9.4715	.9801
26	63 Tauri	6	+16	−44	7 8.0	+11 9 5	−0.3333	.5959	+.0966	+9.4524	.9818
26	B.A.C. 1351	6½	+24	−35	7 9.4	+11 10 28	−0.1823	.5959	+.0966	+9.4486	.9821
26	δ² Tauri	6	−24	−73	7 23.5	+11 24 0	−0.9781	.5961	+.0959	+9.4692	.9803
26	Lal. 8249	7½	0	−64	7 30.4	+11 30 37	−0.6030	.5963	+.0957	+9.4601	.9811
26	Lal. 8256	8	+12	−49	7 32.9	+11 36 0	−0.4043	.5964	+.0956	+9.4552	.9816
26	70 Tauri	7	+77	+ 8	8 2.4	−11 58 40	+0.5867	.5965	+.0950	+9.4305	.9836
26	Lal. 8311	8	+90	+36	8 14.0	−11 47 29	+1.0191	.5965	+.0947	+9.4191	.9845
26	Rumk. 1188	6½	+90	+37	8 14.2	−11 47 17	+1.0205	.5965	+.0947	+9.4191	.9845
26	Rumk. 1189		+18	−42	8 20.0	−11 41 41	−0.3028	.5965	+.0946	+9.4546	.9816
26	71 Tauri	6	+90	+30	8 20.1	−11 41 34	+0.9358	.5966	+.0946	+9.4216	.9843
26	Rumk. 1192		+ 1	−63	8 22.8	−11 38 59	−0.5998	.5968	+.0941	+9.4622	.9809
26	Rumk. 1198	6	+90	+40	8 38.3	−11 24 6	+1.0588	.5969	+.0937	+9.4191	.9845
26	Rumk. 1200		+90	+36	8 50.3	−11 12 33	+1.0074	.5969	+.0935	+9.4210	.9844
26	Rumk. 1203		+54	− 6	9 7.7	−10 55 48	+0.3200	.5969	+.0931	+9.4403	.9828
26	75 Tauri	6	+51	− 9	9 10.2	−10 53 27	+0.2661	.5970	+.0930	+9.4419	.9827
26	θ¹ Tauri	4½	+87	+13	9 13.5	−10 50 19	+0.6668	.5970	+.0930	+9.4313	.9836
26	θ² Tauri	4½	+90	+19	9 15.8	−10 48 5	+0.7619	.5970	+.0929	+9.4288	.9838
26	Rumk. 1210		+67	+ 2	9 23.2	−10 40 56	+0.4829	.5972	+.0923	+9.4367	.9832
26	Rumk. 1212	6	−18	−73	9 30.0	−10 34 25	−0.8952	.5974	+.0922	+9.4720	.9801
26	Rumk. 1214		−47	−73	9 33.5	−10 31 4	−1.2081	.5975	+.0921	+9.4797	.9793
26	Rumk. 1215	7	−52	−73	9 34.0	−10 30 33	−1.2379	.5975	+.0921	+9.4803	.9792
26	80 Tauri *pr.*	6	+90	+39	9 51.7	−10 13 31	+1.0459	.5980	+.0917	+9.4225	.9843
26	B.A.C. 1391	5	+68	+ 4	10 1.0	−10 4 35	+0.5020	.5983	+.0915	+9.4377	.9831
26	81 Tauri	5½	+90	+36	10 3.9	−10 1 53	+1.0086	.5983	+.0914	+9.4242	.9841
26	B.A.C. 1394	7	+73	+ 6	10 6.5	− 9 59 20	+0.5499	.5984	+.0913	+9.4366	.9832
26	Rumk. 1227	7	+90	+29	10 20.9	− 9 45 29	+0.9082	.5988	+.0910	+9.4276	.9839
26	85 Tauri	6	+90	+28	10 32.8	− 9 34 1	+0.8890	.5992	+.0903	+9.4286	.9838
26	Rumk. 1232		+44	−15	10 44.4	− 9 22 56	+0.1567	.5995	+.0901	+9.4484	.9822
26	Rumk. 1233		−35	−73	10 50.1	− 9 17 27	−1.0988	.5980	+.0899	+9.4799	.9793
26	Rumk. 1235		+90	+19	10 55.8	− 9 11 55	+0.7658	.5981	+.0898	+9.4328	.9835
26	B.A.C. 1406	7	+66	+ 2	11 15.2	− 8 53 20	+0.4742	.5983	+.0894	+9.4414	.9828
26	Rumk. 1238	10	+54	− 6	11 34.8	− 8 34 29	+0.3146	.5984	+.0885	+9.4462	.9824
26	Lal. 8599	9	−20	−73	11 38.6	− 8 30 47	−0.9221	.5985	+.0884	+9.4774	.9795
26	Lal. 8610	8	+26	−33	11 46.4	− 8 23 17	−0.1599	.5986	+.0882	+9.4589	.9812
26	Lal. 8613	8	+14	−45	11 47.7	− 8 22 5	−0.3604	.5988	+.0882	+9.4640	.9808
26	α Tauri	1	+57	− 4	12 9.6	− 8 1 2	+0.3559	0.5988	+.0877	+9.4466	9.9823

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
July 26	89 Tauri	7	+90	+29	13 3.8	− 7 9 0	+0.9091	0.5993	+.0860	+9.4340	9.9834
26	σ¹ Tauri	5½	+90	+51	13 28.0	− 6 45 39	+1.1730	.5995	+.0850	+9.4278	.9838
26	σ² Tauri	5½	+90	+41	13 30.6	− 6 43 9	+1.0597	.5996	+.0849	+9.4310	.9836
26	Rumk. 1241		+66	+ 3	13 44.8	− 6 29 31	+0.4740	.5997	+.0846	+9.4470	.9823
26	Rumk. 1243	8	+68	+ 4	13 57.1	− 6 17 41	+0.4972	.5998	+.0843	+9.4469	.9823
26	Rumk. 1246	7	+14	−45	14 23.1	− 5 52 42	−0.3667	.6002	+.0832	+9.4696	.9802
26	Rumk. 1247		+56	− 4	14 23.5	− 5 52 23	+0.3388	.6002	+.0832	+9.4519	.9819
26	Rumk. 1254		+59	− 2	14 38.6	− 5 37 48	+0.3824	.6003	+.0829	+9.4514	.9819
26	Rumk. 1255		+90	+44	14 39.8	− 5 36 43	+1.0945	.6004	+.0829	+9.4326	.9835
26	Lal. 8852	9½	+22	−36	14 57.3	− 5 19 51	−0.2244	.6005	+.0825	+9.4673	.9805
26	Rumk. 1263	9½	+90	+42	15 33.6	− 4 44 59	+1.0728	.6009	+.0811	+9.4352	.9833
26	Rumk. 1268	8½	+90	+61	16 7.7	− 4 12 15	+1.2419	.6012	+.0803	+9.4319	.9835
26	Rumk. 1276		−65	−72	16 34.5	− 3 46 25	−1.2791	.6015	+.0792	+9.4957	.9776
26	Rumk. 1283	7	+80	+12	17 13.7	− 3 8 49	+0.6147	.6018	+.0783	+9.4508	.9820
26	Rumk. 1294		+90	+45	18 4.7	− 2 19 50	+1.1000	.6023	+.0766	+9.4397	.9829
26	Rumk. 1299	7½	+15	−43	18 27.9	− 1 57 30	−0.3503	.6026	+.0756	+9.4772	.9795
26	Rumk. 1300		+18	−40	18 30.1	− 1 55 22	−0.2949	.6026	+.0756	+9.4759	.9797
26	B.A.C. 1526	6	+55	− 4	20 39.4	+ 0 8 45	+0.3294	.6037	+.0715	+9.4645	.9807
27	*m* Tauri	5½	−20	−72	0 32.8	+ 3 52 55	−0.9209	.6056	+.0637	+9.5006	.9770
27	111 Tauri	6	+86	+17	7 11.9	+10 16 4	+0.6575	.6087	+.0505	+9.4722	.9800
27	115 Tauri	5½	+42	−12	8 15.8	+11 17 21	+0.1272	.6090	+.0483	+9.4863	.9786
27	117 Tauri	6	+90	+29	8 36.7	+11 37 25	+0.8570	.6091	+.0472	+9.4690	.9803
27	119 Tauri	5½	+10	−45	10 12.0	−10 51 7	−0.4253	.6098	+.0442	+9.5012	.9770
27	B.A.C. 1728	6½	+90	+48	10 14.6	−10 48 35	+1.1003	.6098	+.0441	+9.4648	.9807
27	120 Tauri	6	+15	−40	10 42.5	−10 21 49	−0.3538	.6104	+.0428	+9.5001	.9771
27	122 Tauri	6	+90	+56	12 6.2	− 9 1 34	+1.1768	.6107	+.0401	+9.4648	.9807
27	130 Tauri	6	+89	+15	16 4.7	− 5 12 45	+0.6949	.6122	+.0315	+9.4823	.9790
27	B.A.C. 1930	6½	+90	+26	22 1.0	+ 0 29 4	+0.7647	.6136	+.0185	+9.4820	.9790
27	χ^3 Orionis	5	−54	−71	22 9.9	+ 0 37 36	−1.2337	.6136	+.0183	+9.5275	.9738
28	71 Orionis	5½	− 5	−66	2 31.4	+ 4 48 25	−0.6901	.6149	+.0082	+9.5169	.9752
28	26 Geminor.	5½	+90	+21	13 0.9	− 9 8 0	+0.6801	.6162	−.0150	+9.4846	.9787
29	λ Geminor.	3½	+90	+66	2 35.0	+ 3 52 29	+1.2482	.6162	−.0455	+9.4603	.9811
31	A Leonis	5	+33	−32	21 53.4	− 3 28 24	−0.0206	.5857	−.1595	+9.2666	.9924
Aug. 1	B.A.C. 3538	6½	+34	−31	3 57.3	+ 2 22 6	+0.0111	.5824	−.1654	+9.2234	.9938
1	44 Leonis	6	+33	−33	5 14.4	+ 3 36 20	−0.0287	.5818	−.1665	+9.2157	.9940
1	B.A.C. 3562	6½	+32	−34	5 23.3	+ 3 44 53	−0.0423	.5816	−.1668	+9.2152	.9941
1	45 Leonis	6	−40	−80	6 15.3	+ 4 35 0	−1.1825	.5813	−.1675	+9.2580	.9928
1	ρ Leonis	4	−33	−80	8 28.3	+ 6 43 12	−1.1056	.5796	−.1694	+9.2391	.9934
1	48 Leonis	6	+90	+36	9 21.1	+ 7 34 8	+1.1112	.5793	−.1699	+9.1234	.9961
1	49 Leonis	6	+ 2	−72	9 26.3	+ 7 39 7	−0.5957	.5790	−.1701	+9.2092	.9942
1	37 Sextantis	6	+90	+16	14 13.9	−11 43 42	+0.8439	.5764	−.1735	+9.0903	.9967
1	*c* Leonis	5	+33	−34	20 38.4	− 5 32 42	−0.0196	.5723	−.1776	+9.0742	.9969
2	τ Leonis	5	+90	+31	8 45.1	+ 6 8 43	+1.0797	.5655	−.1828	+8.7963	.9991
2	89 Leonis	6	+55	−16	11 39.9	+ 8 57 35	+0.3324	.5639	−.1836	+8.8210	.9990
2	MARS		+56	−14	18 56.1	− 8 1 5	+0.3602	.5365	−.1741	+8.6334	.9996
2	β Virginis	3½	+52	−18	19 2.5	− 7 54 54	+0.2905	.5603	−.1850	+8.6418	.9996
2	B.A.C. 4043	6½	+90	+14	22 56.2	− 4 9 0	+0.8494	.5583	−.1854	+8.3454	.9999
3	13 Virginis	6	+69	− 6	8 2.4	+ 4 39 8	+0.5286	.5542	−.1851	−6.9360	.0000
3	η Virginis	3½	+52	−19	8 37.4	+ 5 12 58	+0.2954	.5539	−.1850	+7.0957	.0000
3	γ Virginis *pr.*	2½	− 9	−90	18 54.4	− 8 50 10	−0.7761	.5499	−.1832	−8.1000	.0000
3	B.A.C. 4277	6	−11	−90	19 47.7	− 7 58 37	−0.8115	.5495	−.1829	−8.1679	.9999
4	38 Virginis	6	+62	−10	0 21.7	− 3 33 29	+0.4351	.5480	−.1815	−8.6036	.9995
4	κ Virginis	6	+43	−26	3 26.3	− 0 34 48	+0.1547	.5470	−.1803	−8.7321	.9994
4	46 Virginis	6½	+13	−59	3 53.4	− 0 8 33	−0.3897	.5469	−.1802	−8.6654	.9995
4	48 Virginis	6	+14	−57	5 28.4	+ 1 23 26	−0.3656	0.5463	−.1794	−8.7111	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Aug. 4	θ Virginis *tr.*	4½	+85	+32	8 21.8	+ 4 11 19	+1.0982	0.5455	—.1782	—8.9252	9.9784
4	65 Virginis	6	— 2	—82	14 49.0	+10 26 9	—0.6755	.5439	—.1750	—8.8676	.9788
4	66 Virginis	6	+ 5	—69	15 24.1	+11 0 11	—0.5242	.5437	—.1746	—8.8915	.9987
4	l^2 Virginis	5	+34	—34	19 0.2	— 9 30 32	+0.0155	.5430	—.1727	—8.9870	.9979
4	80 Virginis	6	—40	—90	20 43.8	— 7 50 14	—1.1841	.5429	—.1717	—8.9152	.9985
5	94 Virginis	6	+37	—30	11 42.9	+ 6 40 38	+0.0855	.5401	—.1611	—9.1571	.9955
5	95 Virginis	6	+64	— 7	11 55.4	+ 6 52 47	+0.5036	.5400	—.1610	—9.1786	.9950
5	κ Virginis	4½	+81	+39	14 55.8	+ 9 47 33	+1.0715	.5398	—.1586	—9.2245	.9938
6	ξ^1 Libræ	6	+22	—43	11 18.1	+ 5 31 52	—0.1380	.5386	—.1401	—9.2942	.9914
6	ξ^2 Libræ	6	—17	—90	12 28.9	+ 6 40 28	—0.8266	.5386	—.1386	—9.2755	.9921
7	γ Libræ	4½	+60	— 6	7 28.8	+ 1 4 58	+0.5137	.5393	—.1175	—9.3940	.9862
7	η Libræ	6	+75	+27	11 40.1	+ 5 8 23	+1.0177	.5393	—.1125	—9.4198	.9844
7	48 Libræ	4½	—54	—90	18 37.3	+11 52 38	—1.2173	.5399	—.1039	—9.3804	.9871
7	49 Libræ	5½	+74	+39	19 39.8	—11 6 54	+1.1413	.5401	—.1026	—9.4440	.9825
8	φ Ophiuchi	5	+21	—38	10 41.1	+ 3 26 13	—0.0516	.5415	—.0826	—9.4487	.9820
8	24 Scorpii	5	+73	+14	15 44.3	+ 8 19 52	+0.8310	.5421	—.0756	—9.4777	.9795
8	B.A.C. 5695	6	—14	—85	22 47.3	— 8 50 26	—0.6522	.5429	—.0655	—9.4556	.9815
9	B.A.C. 5771	6½	+16	—49	4 42.1	— 3 6 47	—0.0840	.5437	—.0569	—9 4756	.9796
9	B.A C. 5839	6½	+10	—45	10 20.4	+ 2 20 47	—0.1803	.5440	—.0488	—9 4808	.9791
10	B.A.C. 6060	6½	+48	— 7	3 42.9	— 4 49 50	+0.4895	.5460	—.0220	—9.5076	.9763
10	B A C. 6267	6	—21	—87	19 9.8	+10 7 36	—0 6613	.5470	+.0019	—9.4870	.9785
10	B A C. 6287	6	+38	—13	20 13.1	+11 8 52	+0.3745	.5470	+.0036	—9.5083	.9762
10	B.A.C. 6292	6	+54	— 1	20 46.0	+11 40 39	+0.5773	.5470	+.0046	—9.5123	.9757
10	B A.C 6293	6½	+ 8	—42	20 49.0	+11 43 36	—0.1316	.5470	+.0046	—9.4980	.9773
10	B.A.C. 6294	6	+17	—31	20 49.7	+11 44 18	+0.0243	.5470	+.0047	—9.5012	.9770
11	ρ^1 Sagittarii	4	+28	—26	21 0.6	+11 8 49	+0.1534	.5476	+.0423	—9.4921	.9780
11	ρ^2 Sagittarii	5½	+65	+ 3	21 4.4	+11 12 31	+0.6619	.5477	+.0424	—9.5025	.9768
12	B A.C. 6668	6	+72	+17	0 5.0	— 9 52 39	+0.8776	.5478	+.0470	—9.5042	.9766
12	e^1 Sagittarii	6	—42	—90	6 13.2	— 3 56 12	—1.0503	.5474	+.0562	—9.4557	.9815
12	e^2 Sagittarii	5	—54	—90	7 5.5	— 3 5 34	—1.1806	.5474	+.0576	—9.4514	.9819
13	B.A.C. 6992	6½	—56	—90	1 37.1	— 9 9 20	—1.2134	.5465	+.0847	—9.4185	.9845
13	β Capricor.	3	—55	—90	1 43.9	— 9 2 45	—1.2073	.5463	+.0848	—9.4184	.9846
13	B A C. 7063	6	— 3	—68	6 7.7	— 4 47 16	—0.4915	.5461	+.0908	—9.4266	.9839
13	τ^1 Capricor.	6	+23	—37	9 39.3	— 1 22 23	—0.0436	.5459	+.0958	—9.4296	.9837
13	τ^2 Capricor.	5	+16	—44	10 35.8	— 0 27 43	—0.1574	.5458	+.0971	—9.4245	.9841
13	B A.C. 7145	6½	+74	+45	11 11.6	+ 0 7 0	+1.1940	.5458	+.0977	—9.4556	.9815
13	8 Aquarii	6	—45	—90	20 41.5	+ 9 18 56	—1.1466	.5449	+.1102	—9.3700	.9877
13	9 Aquarii	6	— 4	—73	21 16.7	+ 9 52 59	— 0.5531	.5448	+.1106	—9.3849	.9868
14	18 Aquarii	6	+35	—27	8 33.8	— 3 11 12	+0.1173	.5436	+.1245	—9.3663	.9880
14	λ Capricor.	5½	+27	—37	19 33.9	+ 7 28 21	—0.0489	.5428	+.1366	—9.3169	.9905
14	B.A.C. 7620	6	— 9	—90	23 3.9	+10 51 42	—0.7000	.5424	+.1400	—9.2777	.9921
15	e^1 Aquarii	6	+79	+31	7 24.1	— 5 3 38	+1.0862	.5418	+.1481	—9.2985	.9912
15	B.A.C. 7774	6	+11	—57	10 34.1	— 1 59 34	—0.3637	.5415	+.1509	—9.2264	.9937
15	67 Aquarii	6	+ 3	—70	23 37.4	+10 39 32	—0.5351	.5408	+.1614	—9.1243	.9961
16	λ Aquarii	4	+82	+17	4 15.8	— 8 50 42	+0.8997	.5406	+.1645	—9.1584	.9954
16	78 Aquarii	6	+78	+ 2	5 14.3	— 7 54 1	+0.6540	.5406	+.1652	—9.1383	.9958
16	81 Aquarii	6	+82	+29	8 37.3	— 4 37 21	+1.0683	.5406	+.1674	—9.1308	.9960
16	82 Aquarii	6	+77	+ 1	9 11.5	— 4 4 10	+0.6396	.5405	+.1676	—9.1028	.9965
16	φ Aquarii	4½	+84	+29	15 1.6	+ 1 35 7	+1.0659	.5405	+.1709	—9.0708	.9970
16	96 Aquarii	5½	+67	— 6	17 32.0	— 5 59 11	+0.5124	.5405	+.1723	—9.0079	.9977
16	B.A.C. 8134	6½	+44	—24	18 31.3	+ 4 58 20	+0.1990	.5404	+.1727	—8.9731	.9981
17	20 Piscium	6	+64	— 9	7 39.2	— 6 18 16	+0.4692	.5411	+.1779	—8.7851	.9992
17	B.A C. 8365	6½	+11	—62	16 5.1	+ 1 51 54	—0.4302	.5420	+.1800	—8.3341	.9999
18	44 Piscium	6	—44	—89	2 2.7	+11 30 45	—1.2257	.5432	+.1812	+8.3239	.9999
18	10 Ceti	6	+83	+ 2	2 38.3	—11 54 46	+0.6659	0.5436	+.1812	—8.1349	9.9999

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log. sin *D*	Log cos *D*
			°	°	h m	h m s					
Aug. 18	77 Pisci. *pr.*	7	−14	−86	21 35.1	+ 6 26 5	−0.8521	0.5476	+.1794	+8.8651	9.9988
19	B.A.C. 408	6½	+90	+ 8	5 39.3	− 9 45 22	+0.7516	.5500	+.1769	+8.8485	.9989
19	μ Piscium	4½	+28	−40	9 9.4	− 6 22 5	−0.1150	.5511	+.1756	+8.9784	.9980
19	B.A.C. 481	6½	−43	−83	11 55.9	− 3 41 0	−1.2084	.5521	+.1743	+9.0839	.9968
20	64 Ceti	6½	+72	− 1	4 21.8	−11 47 37	+0.5598	.5581	+.1646	+9.1408	.9958
20	ξ¹ Ceti	4½	+59	−10	5 6.4	−11 4 28	+0.3957	.5586	+.1641	+9.1555	.9955
20	B.A.C. 728	6½	−20	−80	9 45.7	− 6 34 33	−0.9341	.5607	+.1604	+9.2495	.9930
20	B.A.C. 741	6½	+54	−14	10 21.1	− 6 0 20	+0.3218	.5608	+.1600	+9.1997	.9945
20	ξ Arietis	5½	+ 2	−70	10 29.1	− 5 52 41	−0.5865	.5612	+.1598	+9.2400	.9933
20	B.A.C. 755	6	+12	−56	11 22.0	− 5 1 29	−0.4008	.5616	+.1590	+9.2382	.9934
20	B.A.C. 830	6	+67	− 4	18 28.3	+ 1 50 13	+0.4915	.5648	+.1526	+9.2471	.9931
20	38 Arietis	5	−34	−78	19 32.8	+ 2 52 30	−1.1151	.5652	+.1516	+9.3138	.9906
20	μ Ceti	4	+90	+62	19 33.8	+ 2 53 31	+1.2990	.5652	+.1515	+9.2200	.9939
21	B.A.C. 987	6½	+39	−34	7 15.3	− 9 49 24	−0.0859	.5708	+.1392	+9.3368	.9895
21	*f* Tauri	4	+90	+41	15 45.0	− 1 37 44	+1.1157	.5754	+.1285	+9.3345	.9896
22	Wei.III.1085	8½	+74	+ 6	5 56.2	−11 57 27	+0.5660	.5838	+.1069	+9.4033	.9856
22	Weis. IV. 24	9	+80	+ 9	8 39.0	− 9 20 36	+0.6216	.5842	+.1040	+9.4098	.9852
22	Lal. 7753	7½	+29	−30	8 43.9	− 9 15 57	−0.0938	.5842	+.1039	+9.4206	.9837
22	B.A.C. 1231	7	−12	−74	8 46.6	− 9 13 21	−0.8030	.5843	+.1038	+9.4482	.9822
22	Rumk. 1103	7	+49	−12	8 50.0	− 9 10 1	+0.2421	.5843	+.1037	+9.4208	.9844
22	Rumk. 1108	9	+90	+33	9 17.3	− 8 43 44	+0.9901	.5844	+.1032	+9.4012	.9858
22	Rumk. 1123	8½	+90	+43	10 5.8	− 7 57 4	+1.1089	.5849	+.1018	+9.4002	.9858
22	48 Tauri	6	+85	+12	10 46.0	− 7 18 21	+0.6566	.5854	+.1007	+9.4148	.9848
22	Rumk. 1136	6	+27	−32	11 11.5	− 6 53 47	−0.1325	.5854	+.1001	+9.4372	.9831
22	γ Tauri	4	+76	+ 7	12 26.3	− 5 41 46	+0.5797	.5863	+.0977	+9.4215	.9843
22	55 Tauri	7	+16	−44	12 28.2	− 5 39 54	−0.3286	.5864	+.0979	+9.4456	.9824
22	58 Tauri	6	+90	+48	12 47.3	− 5 21 33	+1.1535	.5865	+.0974	+9.4065	.9854
22	Rumk 1163	8	+ 3	−60	13 8.8	− 5 0 51	−0.5553	.5866	+.0970	+9.4530	.9818
22	Wei. IV. 286	8	+90	+65	13 40.5	− 4 30 20	+1.2715	.5869	+.0950	+9.4056	.9855
22	δ¹ Tauri	4	−55	−73	13 42.3	− 4 28 34	−1.2534	.5869	+.0958	+9.4715	.9801
22	63 Tauri	6	+ 9	−52	13 55.4	− 4 16 1	−0.4576	.5870	+.0957	+9.4525	.9818
22	B.A.C. 1351	6½	+17	−42	13 56.8	− 4 14 37	−0.3046	.5870	+.0954	+9.4486	.9821
22	δ² Tauri	6	−36	−73	14 11.4	− 4 0 36	−1.1112	.5872	+.0953	+9.4692	.9803
22	Lal. 8249	7½	− 7	−73	14 18.4	− 3 53 49	−0.7308	.5872	+.0950	+9.4602	.9811
22	Lal. 8256	8	+ 5	−58	14 21.0	− 3 51 22	−0.5294	.5873	+.0948	+9.4552	.9816
22	70 Tauri	7	+66	+ 2	14 51.3	− 3 22 8	+0.4758	.5875	+.0940	+9.4305	.9836
22	Lal. 8311	8	+90	+29	15 3.4	− 3 10 34	+0.9143	.5877	+.0936	+9.4192	.9845
22	Rumk. 1188	6½	+90	+29	15 3.5	− 3 10 23	+0.9158	.5877	+.0936	+9.4191	.9845
22	Rumk. 1189		+10	−50	15 9.6	− 3 4 35	−0.4275	.5876	+.0935	+9.4546	.9816
22	71 Tauri	6	+90	+23	15 9.7	− 3 4 28	+0.8300	.5876	+.0935	+9.4217	.9843
22	Rumk. 1192		− 7	−73	15 12.4	− 3 1 50	−0.7273	.5877	+.0934	+9.4622	.9809
22	Rumk. 1198	6	+90	+32	15 28.4	− 2 46 28	+0.9552	.5878	+.0930	+9.4191	.9845
22	Rumk. 1200		+90	+28	15 40.7	− 2 34 35	+0.9034	.5879	+.0926	+9.4210	.9844
22	Rumk. 1203		+47	−13	15 58.7	− 2 17 17	+0.2062	.5880	+.0921	+9.4403	.9828
22	75 Tauri	6	+44	−16	16 1.2	− 2 14 50	+0.1515	.5880	+.0920	+9.4419	.9827
22	θ¹ Tauri	4½	+74	+ 7	16 4.6	− 2 11 35	+0.5581	.5880	+.0920	+9.4314	.9836
22	θ² Tauri	4½	+85	+12	16 7.0	− 2 9 17	+0.6545	.5880	+.0919	+9.4289	.9838
22	Rumk. 1210		+58	− 4	16 14.7	− 2 1 56	+0.3717	.5881	+.0917	+9.4366	.9832
22	Rumk. 1212	6	−28	−73	16 21.6	− 1 55 13	−1.0261	.5882	+.0915	+9.4721	.9800
22	80 Tauri	6	+90	+31	16 44.1	− 1 33 39	+0.9428	.5883	+.0908	+9.4225	.9843
22	B.A.C. 1391	5	+60	− 2	16 53.6	− 1 24 25	+0.3913	.5884	+.0906	+9.4377	.9831
22	81 Tauri	5½	+90	+17	16 56.6	− 1 21 35	+0.7360	.5884	+.0905	+9.4242	.9841
22	B.A.C. 1394	7	+63	0	16 59.2	− 1 19 1	+0.4398	.5884	+.0904	+9.4366	.9832
22	Rumk. 1227	7	+90	+22	17 14.1	− 1 4 45	+0.8037	.5886	+.0900	+9.4276	.9839
22	85 Tauri	6	+90	+20	17 26.4	− 0 52 55	+0.7843	0.5887	+.0896	+9.4285	9.9838

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. North-ern.	Limiting Parallels. South-ern.	Wash-ington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p′	q′	Log sin D	Log cos D
			°	°	h m	h m s					
Aug. 22	Rumk. 1232		+37	−21	17 38.3	− 0 41 28	+0.0417	0.5888	+.0892	+9.4484	9.9822
22	Rumk. 1233		−51	−73	17 44.2	− 0 35 47	−1.2317	.5889	+.0890	+9.4799	.9793
22	Rumk. 1235		+86	+13	17 50.1	− 0 30 3	+0.6598	.5889	+.0888	+9.4329	.9835
22	B.A.C. 1436	7	+58	− 4	18 10.0	− 0 10 53	+0.3643	.5891	+.0884	+9.4414	.9828
22	Rumk. 1238	10	+47	−12	18 30.3	+ 0 8 36	+0.2024	.5894	+.0877	+9.4463	.9824
22	Lal. 8590	9	−31	−73	18 34.2	+ 0 12 23	−1.0517	.5894	+.0876	+9.4774	.9795
22	Wei. IV. 549	8½	+90	+58	18 34.5	+ 0 12 40	+1.2283	.5894	+.0876	+9.4193	.9845
22	Lal. 8610	8	+19	−38	18 42.3	+ 0 20 9	−0.2787	.5895	+.0873	+9.4589	.9812
22	Lal. 8613	8	+ 7	−54	18 43.5	+ 0 21 21	−0.4821	.5895	+.0873	+9.4640	.9808
22	α Tauri	1	+49	−10	19 6.1	+ 0 43 6	+0.2445	.5895	+.0868	+9.4466	.9823
22	89 Tauri	7	+90	+22	20 2.0	+ 1 36 51	+0.8065	.5899	+.0852	+9.4340	.9834
22	σ¹ Tauri	5½	+90	+42	20 27.0	+ 2 0 56	+1.0745	.5900	+.0845	+9.4278	.9838
22	σ² Tauri	5½	+90	+33	20 29.7	+ 2 3 30	+0.9596	.5900	+.0844	+9.4310	.9836
22	Rumk. 1241		+58	− 3	20 44.3	+ 2 17 35	+0.3656	.5901	+.0840	+9.4470	.9823
22	Rumk. 1243	8	+59	− 2	20 57.1	+ 2 29 50	+0.3892	.5902	+.0836	+9.4469	.9823
22	Rumk. 1246	7	+ 7	−53	21 23.9	+ 2 55 38	−0.4869	.5905	+.0827	+9.4696	.9802
22	Rumk. 1247		+48	−10	21 24.2	+ 2 55 57	+0.2289	.5905	+.0827	+9.4519	.9819
22	Rumk. 1254		+51	− 8	21 39.8	+ 3 11 0	+0.2734	.5906	+.0822	+9.4514	.9819
22	Rumk. 1255		+90	+36	21 41.0	+ 3 12 7	+0.9956	.5906	+.0822	+9.4326	.9835
22	Lal. 8852	9½	+15	−43	21 59.1	+ 3 29 34	−0.3421	.5907	+.0817	+9.4674	.9805
22	Rumk. 1263	9½	+90	+34	22 36.6	+ 4 5 34	+0.9745	.5910	+.0806	+9.4352	.9833
22	Rumk. 1268	8½	+90	+49	23 11.7	+ 4 39 24	+1.1466	.5912	+.0799	+9.4319	.9835
23	Rumk. 1283	7	+69	+ 5	0 19.9	+ 5 44 57	+0.5110	.5920	+.0777	+9.4508	.9820
23	Rumk. 1294		+90	+37	1 12.5	+ 6 35 32	+1.0039	.5924	+.0760	+9.4397	.9829
23	Rumk. 1299	7½	+ 8	−51	1 36.5	+ 6 58 38	−0.4674	.5924	+.0750	+9.4771	.9795
23	Rumk. 1300		+11	−47	1 38.8	+ 7 0 52	−0.4111	.5926	+.0750	+9.4759	.9797
23	B.A.C. 1526	6	+48	− 9	3 52.2	+ 9 9 12	+0.2267	.5937	+.0710	+9.4645	.9808
23	m Tauri	5½	−30	−72	7 53.3	−10 58 59	−1.0426	.5952	+.0635	+9.5005	.9771
23	111 Tauri	6	+75	+11	14 45.7	− 4 22 29	+0.5651	.5983	+.0501	+9.4723	.9800
23	115 Tauri	5½	+36	−18	15 51.7	− 3 19 3	+0.0275	.5986	+.0480	+9.4863	.9786
23	117 Tauri	6	+90	+24	16 13.3	− 2 58 17	+0.7688	.5987	+.0473	+9.4690	.9803
23	119 Tauri	5½	+ 4	−53	17 51.9	− 1 23 33	−0.5319	.5994	+.0440	+9.5013	.9770
23	B.A.C. 1728	6½	+90	+41	17 54.6	− 1 20 56	+1.0172	.5994	+.0439	+9.4648	.9807
23	120 Tauri	6	+ 8	−48	18 23.4	− 0 53 14	−0.4591	.5996	+.0427	+9.5001	.9771
23	122 Tauri	6	+90	+48	19 49.9	+ 0 29 53	+1.0967	.6001	+.0400	+9.4648	.9807
23	130 Tauri	6	+70	+10	23 56.5	+ 4 26 48	+0.5189	.6014	+.0317	+9.4823	.9790
24	B.A.C. 1930	6½	+90	+21	6 4.9	+10 20 44	+0.6864	.6031	+.0190	+9.4819	.9791
24	71 Orionis	5½	−11	−71	10 44.4	− 9 10 50	−0.7861	.6056	+.0090	+9.5169	.9752
24	26 Geminor.	5½	+81	+18	21 34.7	+ 1 13 37	+0.6146	.6062	−.0141	+9.4846	.9788
25	λ Geminor.	3½	+90	+59	11 34.1	− 9 20 32	+1.2025	.6065	−.0438	+9.4603	.9811
25	B.A.C. 2432	6½	− 1	−62	13 29.1	− 7 30 6	−0.6281	.6065	−.0478	+9.5020	.9769
25	f Geminor.	6	+10	−47	19 55.3	− 1 19 18	−0.4279	.6060	−.0609	+9.4893	.9783
26	1 Cancri	6	+90	+32	2 50.9	+ 5 19 53	+0.9262	.6051	−.0748	+9.4440	.9826
26	3 Cancri	6	− 6	−72	4 18.9	+ 6 44 23	−0.7073	.6049	−.0775	+9.4821	.9790
26	5 Cancri	6	+41	−16	4 36.8	+ 7 1 35	+0.1170	.6048	−.0784	+9.4614	.9810
26	B.A.C. 2731	6½	− 8	−73	7 58.0	+10 14 47	−0.7389	.6040	−.0848	+9.4758	.9797
27	54 Cancri	6½	−13	−74	0 21.8	+ 2 0 6	−0.8215	.5991	−.1146	+9.4361	.9832
27	υ¹ Cancri	6	−34	−74	2 51.8	+ 4 24 17	−1.1020	.5984	−.1185	+9.4358	.9832
30	β Virginis	3½	+55	−15	5 0.0	+ 3 50 44	+0.3415	.5651	−.1858	+8.6418	.9996
30	B.A.C. 4043	6½	+90	+17	8 50.6	+ 7 33 29	+0.9001	.5635	−.1863	+8.3456	9.9999
30	13 Virginis	6	+75	− 2	17 48.5	− 7 46 44	+0.5865	.5600	−.1864	−6.9289	0.0000
30	η Virginis	3½	+56	−16	18 22.9	− 7 13 28	+0.3558	.5596	−.1863	+7.0972	.0000
31	γ Virginis pr.	2½	− 5	−80	4 29.1	+ 2 32 34	−0.7023	.5563	−.1847	−8.0998	0.0000
31	B.A.C. 4277	6	− 7	−90	5 21.5	+ 3 23 12	−0.7372	.5560	−.1845	−8.1676	9.9999
31	38 Virginis	6	+67	− 7	9 50.2	+ 7 43 4	+0.5030	0.5545	−.1831	−8.6936	9.9995

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Aug. 31	k Virginis	6	+47	—22	12 51.2	+10 38 8	+0.2263	0.5535	—.1820	—8.7321	9.9994
31	46 Virginis	6½	+17	—53	13 17.8	+11 3 50	—0.3136	.5537	—.1820	—8.6653	.9995
31	48 Virginis	6	+18	—52	14 50.9	—11 26 3	—0.2889	.5532	—.1813	—8.7110	.9994
31	θ Virginis *tr.*	4½	+85	+38	17 40.9	— 8 41 41	+1.1647	.5525	—.1801	—8.9252	.9984
Sept. 1	65 Virginis	6	+ 1	—75	0 0.1	— 2 34 47	—0.5920	.5508	—.1787	—8.8676	.9988
1	66 Virginis	6	+10	—62	0 34.5	— 2 1 31	—0.4416	.5506	—.1766	—8.8915	.9987
1	l^2 Virginis	5	+39	—29	4 6.1	+ 1 23 16	+0.0949	.5497	—.1746	—8.9869	.9979
1	80 Virginis	6	—32	—90	5 47.5	+ 3 1 24	—1.0937	.5494	—.1735	—8.9152	.9985
1	94 Virginis	6	+42	—25	20 27.6	— 6 46 42	+0.1689	.5468	—.1629	—9.1571	.9955
1	95 Virginis	6	+71	— 2	20 39.9	— 6 34 47	+0.5829	.5468	—.1628	—9.1786	.9950
1	κ Virginis	4½	+81	+37	23 36.6	— 3 43 58	+1.1468	.5464	—.1604	—9.2245	.9938
2	ξ^1 Libræ	6	+27	—37	19 34.7	— 8 23 44	—0.0501	.5444	—.1413	—9.2942	.9914
2	ξ^2 Libræ	6	—11	—90	20 44.2	— 7 16 27	—0.7330	.5444	—.1402	—9.2755	.9921
2	18 Libræ *pr.*	6½	—43	—90	21 46.8	— 6 15 53	—1.1601	.5443	—.1391	—9.2650	.9925
3	γ Libræ	4½	+67	— 1	15 24.9	+10 48 44	+0.5961	.5436	—.1186	—9.3940	.9862
3	η Libræ	6	+75	+34	19 32.4	— 9 11 35	+1.0995	.5436	—.1135	—9.4199	.9844
4	48 Libræ	4½	—44	—90	2 24.0	— 2 33 1	—1.1246	.5436	—.1047	—9.3804	.9871
4	49 Libræ	5½	+74	+48	3 25.6	— 1 33 22	+1.2184	.5436	—.1034	—9.4440	.9825
4	φ Ophiuchi	5	+25	—33	18 16.9	—11 10 16	+0.0298	.5439	—.0834	—9.4487	.9821
4	24 Scorpii	5	+73	+19	23 17.4	— 6 19 18	+0.9664	.5441	—.0764	—9.4777	.9795
5	B.A.C. 5695	6	—10	—75	6 17.2	+ 0 27 11	—0.5715	.5444	—.0663	—9.4556	.9815
5	B.A.C. 5771	6½	+21	—35	12 9.8	+ 6 8 36	—0.0074	.5447	—.0561	—9.4765	.9796
5	B.A.C. 5839	6½	+14	—41	17 46.3	+11 34 26	—0.1057	.5447	—.0469	—9.4808	.9791
6	B.A.C. 6060	6½	+54	— 3	11 5.8	+ 4 20 46	+0.5555	.5453	—.0226	—9.5076	.9763
7	B.A.C. 6267	6	—18	—79	2 32.5	— 4 42 4	—0.5987	.5458	+.0017	—9.4870	.9785
7	B.A.C. 6287	6	+43	—10	3 35.8	— 3 40 47	+0.4342	.5458	+.0033	—9.5083	.9762
7	B.A.C. 6292	6	+60	+ 2	4 8.7	— 3 8 58	+0.6365	.5458	+.0040	—9.5123	.9757
7	B.A.C. 6293	6½	+12	—39	4 11.7	— 3 6 3	—0.0709	.5458	+.0040	—9.4980	.9773
7	B.A.C. 6294	6	+20	—30	4 12.4	— 3 5 21	+0.0846	.5458	+.0041	—9.5012	.9770
8	ρ^1 Sagittarii	4	+31	—23	4 25.6	— 3 38 31	+0.2028	.5460	+.0419	—9.4921	.9780
8	ρ^2 Sagittarii	5½	+71	+ 7	4 29.5	— 3 34 45	+0.7110	.5460	+.0420	—9.5025	.9768
8	B.A.C. 6658	6	+72	+21	7 30.4	— 0 39 33	+0.9247	.5459	+.0466	—9.5042	.9766
8	e^1 Sagittarii	6	—38	—90	13 39.3	+ 5 17 36	—1.0035	.5456	+.0558	—9.4556	.9815
8	e^2 Sagittarii	5	—50	—90	14 31.7	+ 6 8 19	—1.1337	.5456	+.0572	—9.4515	.9819
9	B.A.C. 6992	6½	—51	—90	9 5.0	+ 0 6 13	—1.1749	.5454	+.0839	—9.4185	.9845
9	β Capricor.	3	—50	—90	9 11.8	+ 0 12 49	—1.1690	.5454	+.0840	—9.4184	.9845
9	B.A.C. 7063	6	— 1	—65	13 35.8	+ 4 28 27	—0.4563	.5451	+.0904	—9.4267	.9839
9	τ^1 Capricor.	6	+24	—35	17 7.4	+ 7 53 21	—0.0107	.5449	+.0950	—9.4296	.9837
9	τ^2 Capricor.	5	+18	—42	18 3.8	+ 8 48 1	—0.1246	.5449	+.0962	—9.4245	.9841
9	B.A.C. 7145	6½	+74	+49	18 39.7	+ 9 22 45	+1.2235	.5449	+.0972	—9.4556	.9815
10	8 Aquarii	6	—42	—90	4 9.1	— 5 25 49	—1.1158	.5445	+.1094	—9.3700	.9877
10	9 Aquarii	6	— 2	—70	4 44.2	— 4 51 49	—0.5240	.5444	+.1103	—9.3849	.9868
10	18 Aquarii	6	+36	—27	15 59.6	+ 6 2 19	+0.1396	.5439	+.1240	—9.3663	.9879
11	λ Capricor.	5½	+28	—36	2 56.9	— 7 21 2	—0.0306	.5436	+.1363	—9.3169	.9904
11	B.A.C. 7620	6	— 8	—87	6 25.7	— 3 58 51	—0.6806	.5436	+.1401	—9.2778	.9920
11	e^1 Aquarii	6	+79	+32	14 42.5	+ 4 2 26	+1.0952	.5435	+.1482	—9.2984	.9912
11	B.A.C. 7774	6	+12	—56	17 51.0	+ 7 5 0	—0.3499	.5435	+.1511	—9.2264	.9937
12	67 Aquarii	6	+ 4	—69	6 47.0	— 4 23 20	—0.5246	.5436	+.1619	—9.1243	.9961
12	λ Aquarii	4	+82	+17	11 22.4	+ 0 3 28	+0.9012	.5437	+.1653	—9.1584	.9954
12	78 Aquarii	6	+80	+ 3	12 20.2	+ 0 59 29	+0.6693	.5439	+.1658	—9.1300	.9958
12	81 Aquarii	6	+82	+30	15 40.8	+ 4 13 46	+1.0799	.5441	+.1681	—9.1315	.9960
12	82 Aquarii	6	+79	+ 2	16 14.6	+ 4 46 32	+0.6536	.5441	+.1684	—9.1036	.9965
12	φ Aquarii	4½	+84	+29	22 0.3	+10 21 23	+1.0622	.5444	+.1719	—9.0708	.9970
13	96 Aquarii	5½	+67	— 6	0 28.7	—11 14 55	+0.5116	.5446	+.1734	—9.0378	.9977
13	B.A.C. 8134	6½	+45	—23	1 27.2	—10 18 13	+0.1998	0.5446	+.1738	—8.9731	9.9981

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Sept. 13	20 Piscium	6	+64	− 9	14 23.7	+ 2 13 45	+0.4648	0.5460	+.1793	−8.7850	9.9992
13	B.A.C. 8365	6½	+11	−62	22 41.7	+10 16 2	−0.4305	.5470	+.1815	−8.3339	9.9999
14	10 Ceti	6	+90	+23	9 4.5	− 3 41 2	+0.9806	.5489	+.1829	−8.1344	0.0000
15	77 Pisci. *pr.*	7	−14	−86	3 42.5	− 9 39 7	−0.8543	.5531	+.1810	+8.8652	9.9988
15	B.A.C. 408	6½	+90	+ 8	11 38.9	− 1 58 21	+0.7485	.5556	+.1786	+8.8476	.9989
15	μ Piscium	4½	+28	−41	15 5.7	+ 1 21 41	−0.1227	.5564	+.1772	+8.9784	.9980
15	B.A.C. 481	6½	−43	−83	17 49.7	+ 4 0 14	−1.2100	.5574	+.1759	+9.0839	.9968
16	64 Ceti	6½	+71	− 2	10 2.0	− 4 20 0	+0.5488	.5629	+.1660	+9.1408	.9958
16	ξ¹ Ceti	4½	+58	−11	10 46.2	− 3 37 21	+0.3856	.5632	+.1654	+9.1555	.9955
16	B.A.C. 728	6½	−20	−80	15 22.2	+ 0 49 17	−0.9391	.5649	+.1615	+9.2495	.9930
16	B.A.C. 741	6½	+53	−14	15 57.2	+ 1 23 6	+0.3121	.5651	+.1612	+9.1997	.9945
16	ξ Arietis	5½	+ 2	−71	16 5.1	+ 1 30 41	−0.5928	.5651	+.1611	+9.2401	.9933
16	B.A.C. 755	6	+12	−57	16 57.5	+ 2 21 19	−0.4078	.5653	+.1603	+9.2382	.9934
16	B.A.C. 830	6	+66	− 4	23 59.5	+ 9 8 49	+0.4818	.5683	+.1536	+9.2471	.9931
17	38 Arietis	5	−35	−78	1 3.5	+10 10 32	−1.1207	.5686	+.1527	+9.3138	.9906
17	μ Ceti	4	+90	+60	1 4.5	+10 11 33	+1.2880	.5687	+.1527	+9.2200	.9939
17	B.A.C. 987	6½	+29	−34	12 41.1	− 2 36 15	−0.0931	.5736	+.1397	+9.3368	.9895
17	f Tauri	4	+90	+40	21 9.0	+ 5 33 34	+1.1097	.5769	+.1291	+9.3346	.9896
18	Wei. III. 1085	8½	+74	+ 5	11 20.4	− 4 45 53	+0.5623	.5825	+.1085	+9.4033	.9856
18	Weis. IV. 24	9	+80	+ 9	14 3.8	− 2 8 31	+0.6187	.5837	+.1042	+9.4098	.9852
18	Lal. 7753	7½	+29	−31	14 8.7	− 2 3 49	−0.0987	.5838	+.1041	+9.4296	.9837
18	B.A.C. 1281	7	−12	−74	14 11.4	− 2 1 13	−0.8102	.5838	+.1040	+9.4482	.9822
18	Rumk. 1103	7	+49	−12	14 15.4	− 1 57 23	+0.2382	.5838	+.1039	+9.4208	.9844
18	Rumk. 1108	9	+90	+33	14 42.3	− 1 31 29	+0.9885	.5839	+.1030	+9.4012	.9858
18	Rumk. 1123	8½	+90	+43	15 30.9	− 0 44 35	+1.1076	.5843	+.1016	+9.4002	.9858
18	48 Tauri	6	+85	+11	16 11.3	− 0 5 42	+0.6545	.5845	+.1007	+9.4148	.9848
18	Rumk. 1136	6	+27	−33	16 36.9	+ 0 19 0	−0.1371	.5847	+.1000	+9.4372	.9831
18	γ Tauri	4	+76	+ 7	17 52.1	+ 1 31 25	+0.5777	.5852	+.0979	+9.4215	.9843
18	55 Tauri	7	+26	−44	17 54.1	+ 1 33 18	−0.3338	.5852	+.0978	+9.4456	.9824
18	58 Tauri	6	+90	+48	18 13.2	+ 1 51 43	+1.1535	.5853	+.0973	+9.4065	.9854
18	Rumk. 1163	8	+ 3	−61	18 34.9	+ 2 12 34	−0.5610	.5855	+.0967	+9.4530	.9818
18	Wei. IV. 286	8	+90	+65	19 6.7	+ 2 43 12	+1.2717	.5857	+.0958	+9.4056	.9855
18	δ¹ Tauri	4	−57	−73	19 8.6	+ 2 45 0	−1.2621	.5857	+.0957	+9.4715	.9801
18	63 Tauri	6	+ 8	−53	19 21.7	+ 2 57 38	−0.4631	.5857	+.0953	+9.4524	.9818
18	B.A.C. 1351	6½	+17	−43	19 23.2	+ 2 50 3	−0.3095	.5858	+.0953	+9.4486	.9821
18	δ² Tauri	6	−37	−73	19 37.8	+ 3 13 8	−1.1189	.5859	+.0949	+9.4692	.9803
18	Lal. 8249	7½	−28	−71	19 44.9	+ 3 19 59	−0.7371	.5859	+.0947	+9.4602	.9811
18	Lal. 8256	8	+ 4	−58	19 47.5	+ 3 22 26	−0.5351	.5857	+.0946	+9.4553	.9816
18	70 Tauri	7	+66	+ 2	20 18.0	+ 3 51 51	+0.4736	.5859	+.0938	+9.4305	.9836
18	Lal. 8311	8	+90	+29	20 30.1	+ 4 3 29	+0.9143	.5859	+.0935	+9.4192	.9845
18	Rumk. 1188	6½	+90	+29	20 30.3	+ 4 3 41	+0.9156	.5859	+.0935	+9.4192	.9845
18	Rumk. 1189		+10	−51	20 36.3	+ 4 9 30	−0.4312	.5860	+.0933	+9.4546	.9816
18	71 Tauri	6	+90	+23	20 36.5	+ 4 9 38	+0.8293	.5860	+.0933	+9.4218	.9843
18	Rumk. 1192		−28	−73	20 39.3	+ 4 12 18	−0.7335	.5860	+.0932	+9.4622	.9809
18	Rumk. 1198	6	+90	+32	20 55.3	+ 4 27 46	+0.9550	.5861	+.0928	+9.4191	.9845
18	Rumk. 1200		+90	+28	21 7.7	+ 4 39 44	+0.9030	.5862	+.0925	+9.4211	.9843
18	Rumk. 1203		+47	−13	21 25.8	+ 4 57 8	+0.2032	.5863	+.0920	+9.4404	.9828
18	75 Tauri	6	+43	−16	21 28.4	+ 4 59 36	+0.1484	.5863	+.0919	+9.4419	.9827
18	θ¹ Tauri	4½	+74	+ 7	21 31.8	+ 5 2 53	+0.5567	.5863	+.0919	+9.4314	.9836
18	θ² Tauri	4½	+85	+12	21 34.2	+ 5 5 10	+0.6534	.5864	+.0918	+9.4289	.9837
18	Rumk. 1210		+57	− 4	21 41.9	+ 5 12 38	+0.3697	.5865	+.0915	+9.4367	.9831
18	Rumk. 1212	6	−27	−73	21 48.9	+ 5 19 23	−1.0340	.5867	+.0913	+9.4721	.9800
18	80 Tauri *pr.*	6	+90	+31	22 11.5	+ 5 41 6	+0.9432	.5868	+.0907	+9.4226	.9842
18	B.A.C. 1391	5	+59	− 2	22 21.1	+ 5 50 22	+0.3893	.5869	+.0904	+9.4377	.9830
18	81 Tauri	5½	+90	+28	22 24.1	+ 5 53 16	+0.9053	0.5869	+.0903	+9.4242	9.9841

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Sept. 18	B.A.C. 1394	7	+63	0	22 26.8	+ 5 55 51	+0.4382	0.5869	+.0902	+9.4367	9.9831
18	Rumk. 1227	7	+90	+22	22 41.7	+ 6 10 15	+0.8035	.5870	+.0898	+9.4276	.9838
18	85 Tauri	6	+90	+21	22 54.1	+ 6 22 8	+0.7841	.5871	+.0895	+9.4286	.9838
18	Rumk. 1232		+37	−22	23 6.1	+ 6 33 43	+0.0382	.5871	+.0893	+9.4485	.9822
18	Rumk. 1233		−53	−73	23 12.0	+ 6 39 24	−1.2408	.5872	+.0890	+9.4799	.9792
18	Rumk. 1235		+86	+13	23 18.0	+ 6 45 9	+0.6590	.5872	+.0889	+9.4329	.9834
18	B.A.C. 1426	7	+58	− 4	23 38.1	+ 7 4 30	+0.3623	.5872	+.0882	+9.4414	.9827
18	Rumk. 1238	10	+47	−13	23 58.5	+ 7 24 7	+0.1998	.5873	+.0876	+9.4463	.9823
19	Lal. 8599	9	−31	−73	0 2.5	+ 7 27 57	−1.0602	.5873	+.0875	+9.4774	.9795
19	Wei. IV. 549	8½	+90	+59	0 2.7	+ 7 28 14	+1.2306	.5873	+.0875	+9.4193	.9845
19	Lal. 8610	8	+19	−40	0 10.6	+ 7 35 46	−0.2835	.5873	+.0873	+9.4589	.9812
19	Lal. 8613	8	+ 7	−54	0 11.9	+ 7 37 1	−0.4879	.5873	+.0872	+9.4640	.9808
19	α Tauri	1	+49	−10	0 34.6	+ 7 58 54	+0.2424	.5875	+.0866	+9.4466	.9823
19	89 Tauri	7	+90	+22	1 30.9	+ 8 53 8	+0.8067	.5878	+.0849	+9.4340	.9833
19	σ¹ Tauri	5½	+90	+42	1 56.2	+ 9 17 27	+1.0762	.5880	+.0842	+9.4278	.9838
19	σ² Tauri	5½	+90	+33	1 58.9	+ 9 20 1	+0.9609	.5880	+.0841	+9.4310	.9836
19	Rumk. 1241		+58	− 3	2 13.6	+ 9 34 14	+0.3641	.5881	+.0837	+9.4471	.9823
19	Rumk. 1243	8	+59	− 2	2 26.5	+ 9 46 35	+0.3878	.5882	+.0833	+9.4469	.9823
19	Rumk. 1246	7	+ 7	−54	2 53.5	+10 12 37	−0.4921	.5883	+.0825	+9.4607	.9812
19	Rumk. 1247		+48	−11	2 53.9	+10 12 57	+0.2270	.5884	+.0825	+9.4520	.9819
19	Rumk. 1254		+51	− 8	3 9.6	+10 28 8	+0.2716	.5884	+.0822	+9.4514	.9819
19	Rumk. 1255		+90	+36	3 10.8	+10 29 16	+0.9975	.5885	+.0821	+9.4327	.9834
19	Lal. 8852	9½	+15	−44	3 29.1	+10 46 53	−0.3469	.5886	−.0813	+9.4673	.9805
19	Rumk. 1263	9½	+90	+34	4 6.9	+11 23 12	+0.9766	.5887	+.0804	+9.4352	.9832
19	Rumk. 1268	8½	+90	+48	4 42.3	+11 57 22	+1.1497	.5890	+.0792	+9.4319	.9835
19	Rumk. 1283	7	+69	+ 6	5 51.2	−10 56 25	+0.5110	.5892	+.0772	+9.4508	.9820
19	Rumk. 1294		+90	+37	6 44.3	−10 5 15	+1.0069	.5898	+.0756	+9.4398	.9829
19	Rumk. 1299	7½	+ 8	−52	7 8.5	− 9 41 57	−0.4727	.5899	+.0750	+9.4772	.9795
19	Rumk. 1300		+11	−48	7 10.9	− 9 39 41	−0.4162	.5899	+.0750	+9.4759	.9796
19	B.A.C. 1526	6	+48	−10	9 25.7	− 7 29 55	+0.2228	.5903	+.0705	+9.4645	.9807
19	m Tauri	5½	−31	−72	13 29.7	− 3 35 9	−1.0512	.5924	+.0630	+9.5006	.9770
19	111 Tauri	6	+75	+11	20 28.0	+ 3 7 10	+0.5686	.5936	+.0497	+9.4722	.9800
19	115 Tauri	5½	+36	−18	21 35.0	+ 4 11 38	+0.0272	.5938	+.0476	+9.4864	.9786
19	117 Tauri	6	+90	+24	21 56.9	+ 4 32 44	+0.7746	.5940	+.0470	+9.4690	.9803
19	119 Tauri	5½	+ 4	−54	23 37.1	+ 6 9 3	−0.5365	.5943	+.0436	+9.5013	.9770
19	B.A.C. 1728	6½	+90	+42	23 39.9	+ 6 11 44	+1.0252	.5943	+.0435	+9.4648	.9807
20	120 Tauri	6	+ 8	−48	0 9.2	+ 6 39 55	−0.4628	.5943	+.0428	+9.5001	.9771
20	122 Tauri	6	+90	+49	1 37.1	+ 8 4 28	+1.1056	.5948	+.0397	+9.4648	.9807
20	130 Tauri	6	+71	+11	5 48.1	−11 54 10	+0.5240	.5957	+.0314	+9.4823	.9790
20	B.A.C. 1930	6½	+90	+22	12 3.8	− 5 53 0	+0.6944	.5966	+.0189	+9.4820	.9790
20	71 Orionis	5½	−12	−71	16 49.3	− 1 18 33	−0.7927	.5973	+.0091	+9.5169	.9751
21	26 Geminor.	5½	+82	+18	3 54.9	+ 9 21 16	+0.6243	.5980	−.0136	+9.4846	.9788
21	λ Geminor.	3½	+90	+62	18 16.6	− 0 50 27	+1.2218	.5976	−.0427	+9.4603	.9811
21	B.A.C. 2432	6½	− 2	−63	20 14.9	+ 1 3 14	−0.6318	.5976	−.0467	+9.5020	.9769
22	*f* Geminor.	6	+10	−47	2 52.1	+ 7 25 10	−0.4287	.5965	−.0599	+9.4893	.9783
22	1 Cancri	6	+90	+33	10 0.0	− 9 43 25	+0.9436	.5954	−.0736	+9.4440	.9825
22	3 Cancri	6	− 6	−72	11 30.7	− 8 16 15	−0.7117	.5953	−.0766	+9.4821	.9790
22	5 Cancri	6	+42	−16	11 49.1	− 7 58 32	+0.1237	.5951	−.0771	+9.4614	.9810
22	B.A.C. 2731	6½	− 8	−73	15 16.3	− 4 39 19	−0.7437	.5944	−.0833	+9.4758	.9796
23	54 Cancri	6½	−13	−74	8 9.4	+11 35 28	−0.8272	.5899	−.1125	+9.4360	.9832
23	o¹ Cancri	6	−36	−74	10 43.8	− 9 55 57	−1.1115	.5890	−.1168	+9.4358	.9832
24	ξ Leonis	6	+90	+31	1 21.0	+ 4 8 42	+1.0079	.5841	−.1379	+9.3137	.9906
24	18 Leonis	6	+12	−54	7 28.4	+10 2 40	−0.4030	.5818	−.1461	+9.3326	.9897
24	B.A.C. 3345	6	+29	−35	7 58.7	+10 31 48	−0.0937	.5818	−.1466	+9.3194	.9904
24	A Leonis	5	+34	−31	16 43.9	− 5 1 58	−0.0077	0.5785	−.1566	+9.2666	9.9923

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Sept. 24	B.A.C 3538	6½	+36	−30	22 57.1	+ 0 57 54	+0.0297	0.5762	−.1628	+9.2235	9.9938
25	44 Leonis	6	+34	−32	0 15.9	+ 2 13 55	−0.0096	.5758	−.1640	+9.2156	.9941
25	B.A C. 3562	6½	+33	−33	0 25.0	+ 2 22 41	−0.0232	.5754	−.1643	+9.2151	.9941
25	45 Leonis	6	−40	−80	1 18.2	+ 3 13 56	−1.1760	.5754	−.1649	+9.2580	.9928
25	ϱ Leonis	4	−32	−80	3 34.0	+ 5 24 56	−1.0957	.5744	−.1671	+9.2392	.9934
25	48 Leonis	6	+90	+39	4 27.8	+ 6 16 55	+1.1463	.5741	−.1679	+9.1234	.9961
25	49 Leonis *pr.*	6	+ 3	−70	4 33.1	+ 6 21 58	−0.5790	.5740	−.1679	+9.2092	.9942
25	37 Sextantis	6	+90	+18	9 25.8	+11 4 20	+0.8784	.5723	−.1718	+9.0903	.9967
25	c Leonis	5	+35	−32	15 55.5	− 6 39 31	+0.0116	.5700	−.1762	+9.0742	.9969
29	94 Virginis	6	+40	−27	5 45.9	+ 4 19 33	+0.1360	.5508	−.1646	−9.1571	.9955
29	95 Virginis	6	+68	− 4	5 58.1	+ 4 31 20	+0.5487	.5508	−.1644	−9.1786	.9950
29	κ Virginis	4½	+81	+33	8 52.9	+ 7 20 28	+1.1094	.5504	−.1620	−9.2245	.9938
30	ξ^1 Libræ	6	+25	−40	4 36.6	+ 2 26 2	−0.0914	.5492	−.1430	−9.2942	.9914
30	ξ^2 Libræ	6	−13	−90	5 45.1	+ 3 32 24	−0.7716	.5490	−.1418	−9.2755	.9921
30	18 Libræ *pr.*	6½	−47	−90	6 46.9	+ 4 32 9	−1.2003	.5490	−.1407	−9.2650	.9925
Oct. 1	γ Libræ	4½	+62	− 4	0 10.5	− 2 37 45	+0.5437	.5484	−.1203	−9.3940	.9862
1	η Libræ	6	+75	+29	4 14.6	+ 1 18 33	+1.0430	.5484	−.1151	−9.4199	.9844
1	48 Libræ	4½	−48	−90	11 0.6	+ 7 51 30	−1.1727	.5482	−.1062	−9.3804	.9871
1	49 Libræ	5½	+74	+40	12 1.4	+ 8 50 21	+1.1585	.5481	−.1048	−9.4440	.9825
2	φ Ophiuchi	5	+22	−36	2 41.5	− 0 57 51	−0.0291	.5478	−.0842	−9.4486	.9821
2	24 Scorpii	5	+73	+15	7 38.5	+ 3 49 38	+0.8422	.5478	−.0769	−9.4777	.9795
2	B.A.C. 5695	6	−13	−82	14 33.8	+10 31 37	−0.6315	.5475	−.0666	−9.4556	.9815
2	B.A.C. 5771	6½	+17	−39	20 23.0	− 7 50 23	−0.0716	.5474	−.0578	−9.4765	.9796
3	B.A.C. 5839	6½	+11	−45	1 56.6	− 2 27 29	−0.1706	.5473	−.0495	−9.4808	.9791
3	B.A.C. 6069	6½	+48	− 7	19 9.3	− 9 47 55	+0.4855	.5465	−.0228	−9.5076	.9763
4	B A C. 6267	6	−22	−88	10 33.0	+ 5 6 13	−0.6691	.5458	+.0016	−9.4871	.9785
4	B A C. 6287	6	+38	−14	11 36.3	+ 6 7 26	+0.3625	.5458	+.0032	−9.5083	.9762
4	B.A.C. 6292	6	+53	− 2	12 9.1	+ 6 39 12	+0.5647	.5458	+.0039	−9.5123	.9757
4	B A.C. 6293	6½	+ 8	−43	12 12.1	+ 6 42 9	−0.1421	.5458	+.0039	−9.4980	.9773
4	B.A.C. 6294	6	+16	−34	12 12.8	+ 6 42 50	+0.0133	.5458	+.0040	−9.5012	.9770
5	d Sagittarii	5	+71	+60	10 28.5	+ 4 15 59	+1.2586	.5441	+.0388	−9.5166	.9752
5	ϱ^1 Sagittarii	4	+27	−27	12 27.5	+ 6 11 10	+0.1305	.5441	+.0418	−9.4921	.9780
5	ϱ^2 Sagittarii	5½	+63	+ 2	12 31.4	+ 6 14 57	+0.6388	.5441	+.0419	−9.5026	.9768
5	B A.C. 6658	6	+72	+16	15 33.0	+ 9 10 47	+0.8529	.5439	+.0465	−9.5042	.9766
5	e^1 Sagittarii	6	−44	−90	21 43.4	− 8 50 32	−1.0762	.5434	+.0557	−9.4556	.9815
5	e^2 Sagittarii	5	−58	−90	22 36.0	− 7 59 34	−1.2064	.5431	+.0570	−9.4515	.9819
6	β Capricor.	3	−60	−90	17 22.5	+10 11 21	−1.2399	.5421	+.0841	−9.4184	.9845
6	B A C. 7063	6	− 4	−71	21 48.3	− 9 31 16	−0.5252	.5418	+.0900	−9.4267	.9839
7	τ^1 Capricor.	6	+21	−39	1 21.3	− 6 4 53	−0.0781	.5416	+.0946	−9.4296	.9837
7	τ^2 Capricor.	5	+14	−46	2 18.2	− 5 9 50	−0.1920	.5416	+.0959	−9.4245	.9841
7	B.A.C. 7145	6½	+74	+40	2 54.3	− 4 34 50	+1.1577	.5415	+.0968	−9.4556	.9815
7	8 Aquarii	6	−49	−90	12 27.8	+ 4 40 39	−1.1814	.5411	+.1092	−9.3701	.9877
7	9 Aquarii	6	− 6	−76	13 3.1	+ 5 14 53	−0.5887	.5411	+.1099	−9.3850	.9868
8	18 Aquarii	6	+33	−30	0 23.1	− 7 46 19	+0.0799	.5409	+.1241	−9.3663	.9879
8	λ Capricor.	5½	+25	−39	11 24.5	+ 2 54 23	−0.0854	.5408	+.1363	−9.3169	.9904
8	B.A.C. 7620	6	−11	−90	14 54.3	+ 6 17 41	−0.7337	.5409	+.1398	−9.2779	.9920
8	e^1 Aquarii	6	+79	+28	23 13.5	− 9 38 45	+1.0462	.5412	+.1480	−9.2985	.9912
9	B.A.C. 7774	6	+10	−58	2 28.6	− 6 29 28	−0.3811	.5414	+.1512	−9.2264	.9937
9	67 Aquarii	6	+ 1	−74	15 20.5	+ 5 58 2	−0.5778	.5421	+.1620	−9.1243	.9961
9	λ Aquarii	4	+82	+15	19 55.9	+10 24 53	+0.8644	.5427	+.1656	−9.1584	.9954
9	78 Aquarii	6	+75	0	20 53.8	+11 20 55	+0.6206	.5427	+.1663	−9.1383	.9959
10	81 Aquarii	6	+82	+26	0 14.2	− 9 24 56	+1.0330	.5431	+.1686	−9.1308	.9960
10	82 Aquarii	6	+ 8	−64	0 48.0	− 8 52 14	−0.4603	.5434	+.1690	−9.0390	.9974
10	φ Aquarii	4½	+84	+26	6 33.0	− 3 18 2	+1.0323	.5441	+.1727	−9.0708	.9970
10	96 Aquarii	5½	+65	− 8	9 1.0	− 0 54 45	+0.4853	0.5446	+.1741	−9.0079	9.9977

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Oct. 10	B.A.C. 8134	6½	+44	−25	9 59.3	+ 0 1 44	+0.1752	0.5449	+.1746	− 8.9731	9.9981
10	20 Piscium	6	+63	−10	22 51.8	−11 30 18	+0.4499	.5473	+.1805	−8.7850	.9992
11	B.A.C. 8365	6½	+11	−62	7 5.8	− 3 32 2	−0.4334	.5492	+.1831	−8.3338	.9999
11	44 Piscium	6	−42	−89	16 47.4	+ 5 49 19	−1.2109	.5518	+.1847	+8.3241	.9999
11	10 Ceti	6	+82	+ 2	17 22.0	+ 6 24 17	+0.6560	.5519	+.1848	−8.1345	.9999
12	77 Pisci. *pr.*	7	−12	−86	11 43.9	+ 0 10 5	−0.8245	.5580	+.1837	+8.8652	.9988
12	B.A.C. 408	6½	+90	+ 9	19 31.9	+ 7 42 25	+0.7631	.5609	+.1813	+8.8486	.9989
12	μ Piscium	4½	+30	−30	22 54.8	+10 58 32	−0.0874	.5622	+.1801	+8.9784	.9980
13	B.A.C. 481	6½	−37	−83	1 35.6	−10 26 7	−1.1617	.5632	+.1786	+9.0840	.9968
13	64 Ceti	6½	+76	+ 1	17 27.3	+ 4 52 58	+0.5961	.5699	+.1689	+9.1468	.9958
13	ξ¹ Ceti	4½	+62	− 8	18 10.5	+ 5 34 36	+0.4352	.5699	+.1685	+9.1555	.9955
13	B A.C. 728	6½	−15	−80	22 40.2	+ 9 54 57	−0.8712	.5720	+.1647	+9.2496	.9930
13	B.A.C. 741	6½	+57	−11	23 14.4	+10 27 56	+0.3675	.5723	+.1643	+9.1997	.9945
13	ξ Arietis	5½	+ 5	−65	23 22.1	+10 35 19	−0.5278	.5727	+.1640	+9.2401	.9933
14	B.A.C. 755	6	+16	−52	0 13.3	+11 24 46	−0.3439	.5727	+.1633	+9.2282	.9934
14	B A.C. 830	6	+71	− 1	7 5.5	− 5 57 39	+0.5417	.5758	+.1568	+9.2472	.9931
14	38 Arietis	5	−28	−78	8 7.9	− 4 57 27	−1.0416	.5761	+.1557	+9.3138	.9916
14	B A.C. 987	6½	+34	−30	19 28.9	+ 5 59 7	−0.0144	.5813	+.1425	+9.3369	.9905
15	*f* Tauri	4	+90	+47	3 44.6	−10 3 18	+1.1828	.5847	+.1315	+9.3347	.9906
15	Wei.III.1085	8½	+84	+10	17 36.5	+ 3 17 39	+0.6531	.5901	+.1104	+9.4033	.9856
15	Weis. IV. 24	9	+90	+14	20 16.3	+ 5 51 26	+0.7106	.5907	+.1063	+9.4098	.9852
15	Lal. 7753	7½	+35	−25	20 21.0	+ 5 55 56	0.0000	.5907	+.1062	+9.4294	.9837
15	B.A C. 1231	7	− 6	−73	20 23.6	+ 5 58 27	−0.7045	.5908	+.1058	+9.4482	.9822
15	Rumk. 1103	7	+55	− 7	20 27.5	+ 6 2 15	+0.3340	.5909	+.1056	+9.4298	.9844
15	Rumk. 1108	9	+90	+40	20 53.8	+ 6 27 33	+1.0777	.5911	+.1051	+9.4012	.9858
15	Rumk. 1110		−63	−73	20 58.6	+ 6 32 10	− 1.2844	.5911	+.1050	+9.4643	.9807
15	Rumk. 1123	8½	+90	+52	21 41.4	+ 7 13 22	+1.1965	.5912	+.1033	+9.4012	.9858
15	48 Tauri	6	+90	+17	22 21.0	+ 7 51 23	+0.7476	.5913	+.1024	+9.4149	.9848
15	Rumk. 1136	6	+33	−27	22 46.0	+ 8 15 31	−0.0264	.5914	+.1019	+9.4372	.9830
15	γ Tauri	4	+88	+13	23 59.6	+ 9 26 21	+0.6728	.5920	+.0999	+9.4215	.9843
16	55 Tauri	7	+22	−38	0 1.5	+ 9 28 10	−0.2304	.5920	+.0998	+9.4456	.9824
16	58 Tauri	6	+90	+59	0 19.9	+ 9 45 48	+ 1.2428	.5922	+.0993	+9.4065	.9854
16	Rumk 1161		−52	−73	0 38.3	+10 3 31	−1.2394	.5924	+.0987	+9.4723	.9800
16	Rumk. 1163	8	+ 9	−53	0 40.6	+10 5 44	−0.4567	.5924	+.0986	+9.4534	.9818
16	δ¹ Tauri	4	−40	−73	1 14.5	+10 38 20	−1.1497	.5926	+.0978	+9.4716	.9801
16	63 Tauri	6	+15	−46	1 27.3	+10 50 40	−0.3578	.5926	+.0974	+9.4525	.9818
16	B A.C. 1351	6½	+23	−36	1 28.9	+10 52 12	−0.2053	.5927	+.0973	+9.4486	.9821
16	δ² Tauri	6	−27	−73	1 43.1	+11 5 51	−1.0079	.5928	+.0969	+9.4692	.9803
16	Lal. 8249	7½	− 1	−66	1 50.0	+11 12 33	−0.6292	.5928	+.0967	+9.4602	.9811
16	Lal. 8256	8	+10	−50	1 52.5	+11 14 58	−0.4288	.5928	+.0966	+9.4553	.9816
16	70 Tauri	7	+75	+ 7	2 22.5	+11 43 45	+0.5717	.5929	+.0958	+9.4306	.9836
16	Lal. 8311	8	+90	+35	2 34.3	+11 55 8	+1.0083	.5930	+.0954	+9.4192	.9845
16	Rumk. 1188	6½	+90	+36	2 34.5	+11 55 18	+1.0097	.5930	+.0954	+9.4192	.9845
16	Rumk. 1189		+16	−44	2 40.4	−11 58 58	−0.3253	.5930	+.0953	+9.4546	.9816
16	71 Tauri	6	+90	+29	2 40.5	−11 58 52	+0.9245	.5930	+.0953	+9.4218	.9843
16	Rumk. 1192		− 1	−66	2 43.3	−11 56 14	−0.6250	.5930	+.0952	+9.4622	.9809
16	Rumk. 1198	6	+90	+39	2 59.0	−11 41 8	+1.0493	.5931	+.0947	+9.4191	.9845
16	Rumk. 1200		+90	+35	3 11.1	−11 29 25	+0.9977	.5931	+.0943	+9.4211	.9843
16	Rumk. 1203		+54	− 7	3 28.9	−11 12 23	+0.3043	.5932	+.0937	+9.4404	.9828
16	75 Tauri	6	+49	−10	3 31.4	−11 9 59	+0.2500	.5932	+.0937	+9.4419	.9827
16	θ¹ Tauri	4½	+85	+12	3 34.7	−11 6 45	+0.6546	.5932	+.0935	+9.4314	.9836
16	θ² Tauri	4½	+90	+18	3 37.0	−11 4 31	+0.7506	.5932	+.0935	+9.4289	.9837
16	Rumk. 1210		+66	+ 2	3 44.6	−10 57 13	+0.4693	.5933	+.0932	+9.4369	.9831
16	Rumk. 1212	6	−20	−73	3 51.5	−10 50 37	−0.9219	.5933	+.0930	+9.4722	.9801
16	Rumk. 1214		−52	−73	3 55.0	−10 47 13	−1.2374	0.5933	+.0929	+9.4798	9.9798

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p′	q′	Log sin D	Log cos D
			°	°	h m	h m s					
Oct. 16	Rumk. 1215	7	−59	−73	3 55.6	−10 46 41	−1.2679	0.5933	+.0929	+9.4805	9.9792
16	80 Tauri *pr.*	6	+90	+38	4 13.6	−10 29 21	+1.0382	.5934	+.0923	+9.4226	.9842
16	B.A.C. 1391	5	+68	+ 3	4 23.0	−10 20 15	+0.4893	.5934	+.0920	+9.4378	.9830
16	81 Tauri	5½	+90	+35	4 25.9	−10 17 29	+1.0009	.5934	+.0920	+9.4242	.9841
16	B.A.C. 1394	7	+72	+ 6	4 28.6	−10 14 55	+0.5380	.5935	+.0919	+9.4367	.9831
16	Rumk. 1227	7	+90	+28	4 43.2	−10 0 51	+0.0005	.5935	+.0914	+9.4276	.9838
16	85 Tauri	6	+90	+27	4 55.4	− 9 49 8	+0.8812	.5936	+.0912	+9.4286	.9838
16	Rumk. 1232		+43	−16	5 7.1	− 9 37 52	+0.1418	.5936	+.0909	+9.4485	.9821
16	Rumk. 1233		−37	−73	5 12.9	− 9 32 16	−1.1264	.5937	+.0907	+9.4800	.9792
16	Rumk. 1235		+90	+19	5 18.8	− 9 26 39	+0.7574	.5937	+.0905	+9.4329	.9834
16	B.A.C. 1406	7	+65	+ 2	5 39.5	− 9 6 42	+0.4634	.5939	+.0899	+9.4414	.9827
16	Rumk. 1238	10	+53	− 7	5 58.4	− 8 48 30	+0.3026	.5940	+.0893	+9.4464	.9823
16	Lal. 8599	9	−22	−73	6 2.3	− 8 44 46	−0.9467	.5940	+.0892	+9.4775	.9795
16	Lal. 8610	8	+25	−34	6 10.3	− 8 37 5	−0.1766	.5940	+.0889	+9.4590	.9812
16	Lal. 8613	8	+13	−46	6 11.6	− 8 35 52	−0.3791	.5940	+.0889	+9.4640	.9808
16	α Tauri	1	+56	− 5	6 33.9	− 8 14 26	+0.3451	.5941	+.0862	+9.4466	.9823
16	89 Tauri	7	+90	+29	7 29.5	− 7 20 54	+0.9059	.5943	+.0866	+9.4341	.9833
16	σ¹ Tauri	5½	+90	+51	7 53.8	− 6 57 31	+1.1733	.5944	+.0858	+9.4278	.9838
16	σ² Tauri	5½	+90	+41	7 56.4	− 6 55 0	+1.0588	.5946	+.0857	+9.4310	.9836
16	Rumk. 1241		+66	+ 2	8 10.9	− 6 41 3	+0.4670	.5946	+.0853	+9.4471	.9823
16	Rumk. 1243	8	+63	+ 4	8 23.5	− 6 28 58	+0.4906	.5947	+.0849	+9.4469	.9823
16	Rumk. 1246	7	+13	−46	8 50.1	− 6 3 25	−0.3820	.5948	+.0840	+9.4697	.9802
16	Rumk. 1247		+55	− 5	8 50.4	− 6 3 7	+0.3314	.5948	+.0840	+9.4520	.9818
16	Rumk. 1254		+59	− 2	9 5.8	− 5 48 15	+0.3759	.5949	+.0835	+9.4514	.9819
16	Rumk. 1255		+90	+44	9 7.0	− 5 47 7	+1.0560	.5949	+.0835	+9.4327	.9834
16	Lal. 8852	9½	+21	−37	9 24.9	− 5 29 53	−0.2376	.5950	+.0829	+9.4674	.9805
16	Rumk. 1263	9½	+90	+42	10 2.0	− 5 54 16	+1.0757	.5951	+.0819	+9.4352	.9832
16	Rumk. 1268	8½	+90	+62	10 36.8	− 4 20 47	+1.2480	.5952	+.0809	+9.4319	.9835
16	Rumk. 1283	7	+80	+11	11 44.3	− 3 16 0	+0.6147	.5954	+.0787	+9.4508	.9820
16	Rumk. 1294		+90	+46	12 36.5	− 2 25 41	+1.1074	.5956	+.0771	+9.4398	.9829
16	Rumk. 1299	7½	+14	−44	13 0.3	− 2 2 49	−0.3604	.5957	+.0764	+9.4772	.9795
16	Rumk. 1300		+17	−40	13 2.6	− 2 0 37	−0.3040	.5957	+.0763	+9.4760	.9796
16	B.A.C. 1526	6	+55	− 4	15 14.6	+ 0 6 20	+0.3309	.5962	+.0722	+9.4645	.9807
16	*m* Tauri	5½	−21	−72	19 14.8	+ 3 57 18	−0.9313	.5970	+.0645	+9.5006	.9770
17	111 Tauri	6	+90	+18	2 6.5	+10 33 5	+0.6815	.5983	+.0509	+9.4722	.9800
17	115 Tauri	5½	+43	−12	3 12.6	+11 36 34	+0.1439	.5984	+.0488	+9.4863	.9786
17	117 Tauri	6	+90	+31	3 34.2	+11 57 22	+0.8869	.5985	+.0477	+9.4690	.9803
17	119 Tauri	5½	+11	−45	5 13.0	−10 27 42	−0.4156	.5987	+.0447	+9.5013	.9770
17	B.A.C. 1728	6½	+90	+51	5 15.7	−10 25 5	+1.1374	.5987	+.0446	+9.4648	.9807
17	120 Tauri	6	+15	−40	5 44.6	− 9 57 16	−0.3422	.5988	+.0434	+9.5001	.9771
17	122 Tauri	6	+90	+61	7 11.4	− 8 33 51	+1.2190	.5990	+.0410	+9.4648	.9807
17	130 Tauri	6	+84	+17	11 19.4	− 4 35 34	+0.6418	.5994	+.0323	+9.4823	.9790
17	B.A.C. 1930	6½	+90	+29	17 31.2	+ 1 21 44	+0.8147	.5995	+.0191	+9.4820	.9790
17	χ³ Orionis	5	−53	−71	17 40.5	+ 1 30 41	−1.2269	.5996	+.0188	+9.5275	.9738
17	71 Orionis	5½	− 4	−63	22 14.3	+ 5 53 48	−0.6660	.5996	+.0097	+9.5169	.9751
18	26 Geminor.	5½	+90	+26	9 16.4	− 7 29 54	+0.7511	.5990	−.0133	+9.4846	.9788
19	B.A.C. 2432	6½	+ 6	−51	1 36.5	+ 8 12 12	−0.5035	.5959	−.0470	+9.5020	.9769
19	*f* Geminor.	6	+18	−38	8 15.7	− 9 23 58	−0.3006	.5944	−.0596	+9.4893	.9783
19	1 Cancri	6	+90	+43	15 26.8	− 2 29 17	+1.0762	.5920	−.0736	+9.4440	.9825
19	3 Cancri	6	+ 1	−61	16 58.3	− 1 1 19	−0.5857	.5916	−.0762	+9.4821	.9790
19	5 Cancri	6	+50	− 8	17 16.9	− 0 43 25	+0.2530	.5914	−.0766	+9.4613	.9810
19	B A.C. 2731	6½	− 1	−64	20 46.2	+ 2 37 46	−0.6189	.5903	−.0832	+9.4757	.9796
20	54 Cancri	6½	− 6	−74	13 53.4	− 4 53 12	−0.7096	.5839	−.1120	+9.4360	.9832
20	υ¹ Cancri	6	−25	−74	16 30.4	− 2 21 57	−0.9977	.5828	−.1162	+9.4357	.9832
21	ξ Leonis	6	+90	+41	7 24.6	+11 59 44	+1.1321	0.5768	−.1372	+9.3137	9.9906

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Oct. 21	18 Leonis	6	+18	−47	13 40.0	− 5 58 18	−0.2057	0.5741	−.1449	+9.3325	9.9897
21	B.A.C. 3345	6	+36	−29	14 10.9	− 5 28 29	+0.0162	.5740	−.1453	+9.3193	.9903
21	A Leonis	5	+40	−25	23 8.3	+ 3 9 55	+0.0961	.5704	−.1552	+9.2665	.9925
22	B.A.C. 3538	6½	+42	−24	5 30.5	+ 9 18 51	+0.1285	.5679	−.1616	+9.2234	.9938
22	44 Leonis	6	+40	−27	6 51.2	+10 36 44	+0.0878	.5675	−.1627	+9.2156	.9941
22	B.A.C. 3562	6½	+39	−27	7 0.5	+10 45 43	+0.0739	.5675	−.1628	+9.2151	.9941
22	45 Leonis	6	−32	−80	7 55.0	+11 38 18	−1.0917	.5673	−.1636	+9.2570	.9927
22	ρ Leonis	4	−25	−80	10 14.1	−10 7 25	−1.0127	.5665	−.1656	+9.2391	.9934
22	48 Leonis	6	+90	+51	11 9.4	− 9 14 3	+1.2517	.5660	−.1664	+9.1234	.9961
22	37 Sextantis	6	+90	+24	16 14.7	− 4 19 10	+0.9763	.5643	−.1702	+9.0902	.9967
22	c Leonis	5	+40	−28	22 54.1	+ 2 6 40	+0.0934	.5620	−.1749	+9.0741	.9969
23	τ Leonis	5	+90	+42	11 23.7	− 9 48 55	+1.2014	.5582	−.1812	+8.7962	.9991
23	89 Leonis	6	+63	−10	14 23.1	− 6 55 34	+0.4412	.5574	−.1823	+8.8209	.9990
23	β Virginis	3½	+59	−13	21 55.1	+ 0 21 29	+0.3922	.5557	−.1845	+8.6417	.9996
24	B.A.C. 4043	6½	+90	+21	1 52.7	+ 4 11 19	+0.9548	.5550	−.1852	+8.3453	9.9999
24	13 Virginis	6	+79	0	11 0.6	−10 58 56	+0.6317	.5532	−.1859	−6.9353	0.0000
24	η Virginis	3½	+58	−14	11 40.6	−10 20 6	+0.3825	.5531	−.1859	+7.0930	.0000
24	γ Virginis *pr.*	2½	− 5	−89	21 59.7	− 0 21 3	−0.7057	.5517	−.1851	−8.1082	.0000
24	B.A.C. 4277	6	− 7	−90	22 53.1	+ 0 30 31	−0.7427	.5514	−.1848	− 8.1679	0.0000
25	38 Virginis	6	+67	− 7	3 26.2	+ 4 54 52	+0.5010	.5509	−.1838	−8.6937	9.9995
25	*k* Virginis	6	+47	−23	6 29.9	+ 7 52 35	+0.2157	.5507	−.1829	−8.7321	.9994
28	γ Libræ	4½	+55	−10	8 43.0	+ 7 42 36	+0.4387	.5502	−.1220	−9.3940	.9862
28	η Libræ	6	+75	+21	12 46.2	+11 37 56	+0.9324	.5504	−.1168	−9.4199	.9844
28	48 Libræ	4½	−68	−90	19 30.2	− 5 51 3	−1.2921	.5507	−.1078	−9.3804	.9871
28	49 Libræ	5½	+74	+29	20 30.7	− 4 52 32	+1.0375	.5507	−.1064	−9.4439	.9825
29	φ Ophiuchi	5	+15	−45	11 5.2	+ 9 13 44	−0.1683	.5507	−.0860	−9.4486	.9821
29	24 Scorpii	5	+71	+ 5	16 0.1	−10 0 53	+0.6961	.5507	−.0787	−9.4776	.9795
29	B.A.C. 5695	6	−22	−90	22 52.4	− 3 22 0	−0.7840	.5507	−.0683	−9.4556	.9815
30	B.A.C. 5771	6½	+ 8	−49	4 39.0	+ 2 13 24	−0.2309	.5504	−.0593	−9.4765	.9796
30	B.A.C. 5839	6½	+ 2	−56	10 10.2	+ 7 33 52	−0.3355	.5503	−.0509	−9.4808	.9791
31	B.A.C. 6060	6½	+36	−17	3 15.8	+ 0 6 22	+0.3042	.5503	−.0238	−9.5076	.9763
31	B.A.C. 6267	6	−34	−90	18 38.8	− 9 0 12	−0.8620	.5474	+.0010	−9.4871	.9785
31	B.A.C. 6287	6	+25	−25	19 37.8	− 8 3 15	+0.1638	.5473	+.0026	−9.5083	.9762
31	B.A.C. 6292	6	+38	−14	20 10.5	− 7.31 36	+0.3705	.5471	+.0032	−9.5123	.9757
31	B.A.C. 6293	6½	− 3	−56	20 13.5	− 7 28 42	−0.3362	.5471	+.0033	−9.4980	.9773
31	B.A.C. 6294	6	+ 6	−46	20 14.2	− 7 28 0	−0.1808	.5471	+.0033	−9.5012	.9770
Nov. 1	B.A.C. 6536	6	+71	+55	13 55.9	+ 9 39 43	+1.2388	.5449	+.0312	−9.5233	.9744
1	*d* Sagittarii	5	+71	+31	18 27.8	− 9 56 57	+1.0537	.5441	+.0384	−9.5166	.9752
1	ρ¹ Sagittarii	4	+15	−39	20 26.9	− 8 1 38	−0.0770	.5438	+.0414	−9.4921	.9780
1	ρ² Sagittarii	5½	+46	−10	20 30.8	− 7 57 51	+0.4321	.5438	+.0415	−9.5026	.9768
1	B.A.C. 6658	6	+64	+ 2	23 32.7	− 5 1 46	+0.6455	.5433	+.0461	−9.5042	.9766
3	B.A.C. 7063	6	−17	−90	5 57.3	+ 0 25 35	−0.7423	.5389	+.0806	−9.4267	.9839
3	B.A.C. 7097	6	+73	+38	8 36.5	+ 2 59 47	+1.1376	.5384	+.0932	−9.4653	.9806
3	τ¹ Capricor.	6	+ 9	−53	9 32.3	+ 3 53 52	−0.2936	.5384	+.0944	−9.4256	.9837
3	τ² Capricor.	5	+ 3	−61	10 29.7	+ 4 49 31	−0.4079	.5383	+.0957	−9.4246	.9841
3	B.A.C. 7145	6½	+74	+28	11 6.1	+ 5 24 47	+0.9478	.5383	+.0963	−9.4556	.9815
3	9 Aquarii	6	−19	−90	21 21.4	− 8 39 1	−0.8050	.5370	+.1092	−9.3850	.9868
4	18 Aquarii	6	+21	−41	8 49.9	+ 2 28 20	−0.1297	.5360	+.1231	−9.3663	.9879
4	B.A.C. 7487	6½	+76	+42	13 51.5	+ 7 20 38	+1.1890	.5358	+.1287	−9.3857	.9868
4	λ Capricor.	5½	+14	−51	20 0.6	−10 41 39	−0.2905	.5355	+.1353	−9.3169	.9904
4	B.A.C. 7620	6	−24	−90	23 33.6	− 7 15 12	−0.9402	.5354	+.1391	−9.2779	.9920
5	e¹ Aquarii	6	+79	+14	8 0.4	+ 0 56 6	+0.8557	.5356	+.1473	−9.2485	.9912
5	B.A.C. 7774	6	− 1	−76	11 12.5	+ 4 2 18	−0.5924	.5358	+.1502	−9.2264	.9937
6	67 Aquarii	6	− 9	−90	0 22.6	− 7 11 54	−0.7461	.5365	+.1615	−9.1943	.9961
6	λ Aquarii	4	+81	+ 4	5 2.3	− 2 40 47	+0.6925	0.5370	+.1649	−9.1584	9.9964

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Nov. 6	78 Aquarii	6	+61	—10	6 1.1	— 1 43 51	+0.4485	0.5370	+.1656	—9.1383	9.9958
6	81 Aquarii	6	+82	+14	9 24.5	+ 1 33 20	+0.8666	.5376	+.1681	— 9.1308	.9960
6	82 Aquarii	6	+61	—11	9 58.8	+ 2 6 33	+0.4398	.5377	+.1684	—9.1029	.9965
6	φ Aquarii	4½	+84	+15	15 48.9	+ 7 45 49	+0.8738	.5386	+.1721	—9.0708	.9970
6	96 Aquarii	5½	+53	—17	18 18.9	+10 11 11	+0.3260	.5393	+.1736	—9.0079	.9977
6	B.A.C. 8134	6½	+35	—34	19 18.1	+11 8 31	+0.0170	.5394	+.1741	—8.9731	.9981
7	20 Piscium	6	+53	—18	8 20.4	— 0 13 38	+0.3117	.5424	+.1805	—8.7851	.9992
7	24 Piscium	6½	+86	+37	10 46.3	+ 2 7 39	+1.1655	.5431	+.1815	—8.8311	.9990
7	B.A C. 8365	6½	+ 4	—72	16 39.7	+ 7 49 53	—0.5601	.5451	+.1834	—8.3339	9.9999
8	10 Ceti	6	+90	+15	3 1.0	— 6 8 41	+0.8720	.5487	+.1855	—8.1338	0.0000
8	77 Pisci. *pr.*	7	—16	—89	21 27.2	+11 41 23	—0.8947	.5568	+.1851	+8.8652	9.9998
9	B.A.C. 408	6½	+89	+ 5	5 14.8	— 4 46 38	+0.7049	.5603	+.1833	+8.8486	.9989
9	μ Piscium	4½	+27	—42	8 37.2	— 1 31 4	—0.1360	.5623	+.1823	+8.9785	.9980
9	B.A.C. 481	6½	—41	—83	11 17.3	+ 1 3 38	—1.2006	.5636	+.1811	+9.0839	.9968
10	64 Ceti	6½	+75	0	3 1.9	— 7 44 28	+0.5830	.5723	+.1719	+9.1408	.9958
10	ξ^1 Ceti	4½	+62	— 9	3 44.6	— 7 3 17	+0.4247	.5727	+.1714	+9.1555	.9955
10	B A.C. 728	6½	—14	—80	8 11.2	— 2 46 7	—0.8632	.5750	+.1679	+9.2496	.9930
10	B.A.C. 741	6½	+58	—12	8 44.9	— 2 13 33	+0.3680	.5757	+.1673	+9.1998	.9945
10	ξ Arietis	5½	+ 6	—65	8 52.5	— 2 6 16	—0.5206	.5758	+.1673	+9.2401	.9933
10	B.A.C. 755	6	+16	—52	9 43.0	— 1 17 30	—0.3361	.5761	+.1664	+9.2382	.9934
10	B.A.C. 830	6	+73	0	16 29.2	+ 5 14 4	+0.5583	.5801	+.1600	+9.2471	.9931
10	38 Arietis	5	—25	—78	17 30.6	+ 6 13 15	—1.0104	.5809	+.1590	+9.3138	.9906
11	B A.C. 987	6½	+37	—27	4 39.1	— 7 2 44	+0.0319	.5869	+.1462	+9.3369	.9895
11	*f* Tauri	4	+90	+53	12 44.1	+ 0 44 8	+1.2331	.5917	+.1353	+9.3347	.9896
12	Wei. III. 1085	8½	+90	+15	2 15.1	—10 15 52	+0.7357	.5983	+.1143	+9.4033	.9856
12	Lal. 7753	7½	+40	—20	4 55.2	— 7 42 0	+0.0964	.5905	+.1096	+9.4294	.9837
12	B.A C. 1281	7	+ 1	—64	4 58.9	— 7 38 20	—0.5969	.5995	+.1095	+9.4482	.9822
12	Rumk. 1103	7	+62	— 2	5 1.5	— 7 35 54	+0.4262	.5999	+.1076	+9.4208	.9844
12	48 Tauri	6	+90	+22	6 51.8	— 5 49 53	+0.8381	.6003	+.1062	+9.4149	.9848
12	Rumk. 1136	6	+39	—21	7 16.2	— 5 26 27	+0.0650	.6005	+.1056	+9.4372	.9831
12	γ Tauri	4	+90	+18	8 27.7	— 4 17 44	+0.7672	.6010	+.1033	+9.4215	.9843
12	55 Tauri	7	+28	—32	8 29.6	— 4 15 56	—0.1241	.6010	+.1032	+9.4456	.9824
12	Rumk. 1163	8	+15	—45	9 8.3	— 3 38 43	—0.3447	.6012	+.1022	+9.4530	.9818
12	δ^1 Tauri	4	—28	—73	9 40.4	— 3 7 52	—1.0287	.6015	+.1011	+9.4716	.9801
12	63 Tauri	6	+21	—39	9 52.9	— 2 55 54	—0.2469	.6016	+.1007	+9.4525	.9818
12	B.A.C. 1351	6½	+29	—30	9 54.3	— 2 54 33	—0.0966	.6016	+.1007	+9.4486	.9821
12	δ^2 Tauri	6	—17	—73	10 8.2	— 2 41 11	—0.8878	.6017	+.1007	+9.4692	.9803
12	Lal. 8249	7½	+ 6	—57	10 15.0	— 2 34 41	—0.5139	.6018	+.1001	+9.4602	.9811
12	Lal. 8256	8	+17	—43	10 17.4	— 2 32 21	—0.3163	.6018	+.1000	+9.4553	.9816
12	70 Tauri	7	+88	+13	10 46.5	— 2 4 26	+0.6716	.6020	+.0991	+9.4306	.9836
12	Lal. 8311	8	+90	+43	10 58.0	— 1 53 23	+1.1031	.6021	+.0988	+9.4192	.9845
12	Rumk. 1188	6½	+90	+43	10 58.1	— 1 53 12	+1.1043	.6021	+.0987	+9.4192	.9845
12	71 Tauri	6	+90	+36	11 4.0	— 1 47 35	+1.0200	.6022	+.0986	+9.4215	.9843
12	Rumk. 1198	6	+90	+47	11 21.9	— 1 30 21	+1.1437	.6022	+.0980	+9.4191	.9845
12	75 Tauri	6	+58	— 5	11 53.4	— 1 0 7	+0.3564	.6024	+.0971	+9.4419	.9827
12	θ^1 Tauri	4½	+90	+18	11 56.6	— 0 57 2	+0.7358	.6024	+.0970	+9.4314	.9836
12	θ^2 Tauri	4½	+90	+24	11 58.9	— 0 54 50	+0.8505	.6024	+.0969	+9.4289	.9837
12	Rumk. 1212	6	—11	—73	12 12.9	— 0 41 23	—0.7989	.6025	+.0965	+9.4721	.9800
12	Rumk. 1215	7	—39	—73	12 16.9	— 0 37 34	—1.1402	.6026	+.0964	+9.4805	.9792
12	80 Tauri *pr.*	6	+90	+47	12 34.4	— 0 20 45	+1.1355	.6027	+.0959	+9.4226	.9842
12	B.A.C. 1391	5	+78	+ 9	12 43.5	— 0 11 57	+0.5942	.6028	+.0956	+9.4377	.9830
12	81 Tauri	5½	+90	+43	12 46.3	— 0 9 16	+1.0993	.6028	+.0955	+9.4242	.9841
12	B.A.C. 1394	7	+84	+11	12 48.9	— 0 6 45	+0.6424	.6028	+.0954	+9.4367	.9831
12	Rumk. 1227	7	+90	+35	13 3.2	+ 0 6 54	+1.0002	.6029	+.0949	+9.4276	.9838
12	85 Tauri	6	+90	+34	13 14.9	+ 0 18 13	+0.9815	0.6029	+.0942	+9.4286	9.9838

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Nov. 12	B.A.C. 1406	7	+75	+ 8	13 56.8	+ 0 58 25	+0.5711	0.6030	+.0932	+9.4414	9.9827
12	Lal. 8610	8	+32	−27	14 27.6	+ 1 28 2	−0.0595	.6033	+.0922	+9.4590	.9812
12	Lal. 8613	8	+20	−39	14 28.9	+ 1 29 13	−0.2592	.6034	+.0922	+9.4640	.9808
12	α Tauri	1	+65	+ 1	14 50.5	+ 1 50 2	+0.4559	.6035	+.0915	+9.4466	.9823
12	89 Tauri	7	+90	+36	15 44.1	+ 2 41 28	+1.0102	.6038	+.0898	+9.4341	.9833
12	σ¹ Tauri	5½	+90	+67	16 8.1	+ 3 4 34	+1.2750	.6039	+.0889	+9.4278	.9838
12	σ² Tauri	5½	+90	+50	16 10.6	+ 3 7 0	+1.1620	.6040	+.0889	+9.4310	.9836
12	Rumk. 1243	8	+79	+10	16 36.9	+ 3 32 13	+0.6027	.6042	+.0880	+9.4469	.9823
12	Rumk. 1246	7	+20	−38	17 2.6	+ 3 56 56	−0.2572	.6042	+.0874	+9.4697	.9802
12	Rumk. 1283	7	+90	+18	19 51.8	+ 6 39 25	+0.7311	.6052	+.0819	+9.4508	.9820
12	Rumk. 1299	7½	+22	−36	21 5.3	+ 7 49 58	−0.2281	.6055	+.0796	+9.4772	.9795
12	B.A.C. 1526	6	+65	+ 3	23 15.8	+ 9 55 20	+0.4576	.6062	+.0753	+9.4645	.9807
13	*m* Tauri	5½	−10	−72	3 8.2	−10 21 37	−0.7804	.6073	+.0674	+9.5016	.9770
13	111 Tauri	6	+90	+26	9 46.9	− 3 58 52	+0.8215	.6086	+.0533	+9.4722	.9800
13	115 Tauri	5½	+53	− 4	10 50.8	− 2 57 29	+0.2924	.6086	+.0511	+9.4863	.9786
13	117 Tauri	6	+90	+41	11 11.7	− 2 37 24	+1.0257	.6088	+.0506	+9.4690	.9803
13	119 Tauri	5½	+20	−34	12 47.4	− 1 5 38	−0.2559	.6091	+.0469	+9.5013	.9770
13	120 Tauri	6	+24	−30	13 18.0	− 0 36 14	−0.1828	.6093	+.0461	+9.5001	.9771
13	130 Tauri	6	+90	+27	18 42.0	+ 4 34 43	+0.7960	.6097	+.0341	+9.4823	.9790
13	χ² Orionis	6	−41	−71	21 33.5	+ 7 19 17	−1.1484	.6098	+.0278	+9.5282	.9737
14	B.A.C. 1930	6½	+90	+40	0 41.9	+10 20 3	+0.9754	.6098	+.0210	+9.4820	.9790
14	χ² Orionis	5	−30	−71	0 50.9	+10 28 42	−1.0263	.6098	+.0207	+9.5275	.9738
14	68 Orionis	6	−37	−70	4 9.3	−10 20 54	−1.1071	.6098	+.0136	+9.5342	.9735
14	71 Orionis	5½	+ 8	−46	5 16.0	− 9 16 53	−0.4776	.6098	+.0112	+9.5169	.9752
14	26 Geminor.	5½	+90	+38	15 57.7	+ 0 58 54	+0.9341	.6086	−.0125	+9.4846	.9788
15	B.A.C. 2432	6½	+19	−36	7 49.8	− 7 47 5	−0.2858	.6042	−.0465	+9.5020	.9769
15	*f* Geminor.	6	+30	−25	14 18.7	− 1 33 34	−0.0795	.6020	−.0596	+9.4893	.9783
15	*q* Geminor.	5½	−36	−71	16 56.2	+ 0 57 49	−1.1020	.6016	−.0630	+9.5088	.9761
15	3 Cancri	6	+15	−43	22 49.0	+ 6 36 36	−0.3551	.5981	−.0765	+9.4821	.9790
15	5 Cancri	6	+59	+ 4	23 7.1	+ 6 54 14	+0.4757	.5981	−.0769	+9.4613	.9810
16	B.A.C. 2731	6½	+13	−46	2 31.9	+10 11 6	−0.3856	.5965	−.0840	+9.4757	.9796
16	ζ¹ Cancri	4½	−35	−72	3 24.2	+11 1 18	−1.1046	.5959	−.0853	+9.4909	.9781
16	ζ² Cancri	7½	−35	−72	3 24.3	+11 1 25	−1.1020	.5959	−.0853	+9.4909	.9781
16	*d*² Cancri	6	−29	−73	8 57.5	− 7 38 8	−1.0394	.5929	−.0951	+9.4776	.9795
16	54 Cancri	6½	+ 9	−55	19 21.1	+ 2 21 48	−0.4686	.5880	−.1124	+9.4360	.9832
16	o¹ Cancri	6	− 8	−74	21 55.9	+ 4 50 52	−0.7539	.5864	−.1166	+9.4357	.9832
16	o² Cancri	6	−28	−74	22 4.1	+ 4 58 33	−1.0323	.5864	−.1168	+9.4426	.9826
17	π¹ Cancri	6½	−48	−75	4 17.5	+10 58 19	−1.2246	.5829	−.1260	+9.4276	.9838
17	18 Leonis	6	+32	−33	18 54.3	+ 1 3 20	−0.0559	.5747	−.1453	+9.3325	.9897
17	B.A.C. 3345	6	+50	−16	19 25.1	+ 1 33 1	+0.2550	.5743	−.1460	+9.3193	.9903
18	A Leonis	5	+55	−13	4 21.3	+10 10 15	+0.3327	.5696	−.1555	+9.2665	.9925
18	B.A.C. 3538	6½	+57	−12	10 43.9	− 7 40 32	+0.3627	.5662	−.1617	+9.2233	.9938
18	44 Leonis	6	+54	−14	12 4.8	− 6 22 24	+0.3214	.5657	−.1629	+9.2156	.9940
18	B.A.C. 3562	6½	+53	−15	12 14.2	− 6 13 22	+0.3074	.5657	−.1630	+9.2151	.9941
18	45 Leonis	6	−14	−80	13 8.8	− 5 20 38	−0.8588	.5653	−.1638	+9.2579	.9927
18	ρ Leonis	4	− 9	−80	15 28.4	− 3 5 48	−0.7816	.5638	−.1658	+9.2390	.9934
18	49 Leonis *pr.*	6	+20	−48	16 29.3	− 2 7 3	−0.2611	.5634	−.1666	+9.2094	.9942
18	37 Sextantis	6	+90	+44	21 30.8	+ 2 44 16	+1.2053	.5612	−.1704	+9.0901	.9967
19	*c* Leonis	5	+54	−16	4 13.3	+ 9 13 10	+0.3157	.5583	−.1747	+9.0741	.9969
19	χ Leonis	5	−59	−82	6 12.0	+11 7 54	−1.3125	.5574	−.1759	+9.1462	.9957
19	σ Leonis	4	−56	−84	13 40.0	− 5 39 0	−1.3014	.5545	−.1796	+9.0704	.9970
19	89 Leonis	6	+82	+ 2	19 52.5	+ 0 21 16	+0.6489	.5525	−.1819	+8.8207	.9990
20	β Virginis	3½	+75	− 2	3 31.0	+ 7 44 46	+0.5903	.5502	−.1841	+8.6415	.9996
20	B.A.C. 4043	6½	+90	+36	7 32.4	+11 38 19	+1.1474	.5490	−.1848	+8.3448	.9999
20	10 Virginis	6	−44	−88	12 36.3	− 7 27 35	−1.2277	0.5477	−.1854	+8.6635	9.9995

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Nov. 20	13 Virginis	6	+90	+10	16 54.2	− 3 17 57	+0.7965	0.5470	−.1856	−6.9445	0.0000
20	η Virginis	3½	+72	− 4	17 30.1	− 2 43 13	+0.5596	.5469	−.1856	+7.0863	0.0000
21	γ Virginis *pr.*	2½	+ 4	−72	4 0.5	+ 7 27 7	−0.5535	.5451	−.1847	−8.1008	0.0000
21	B.A.C. 4277	6	+ 2	−75	4 54.8	+ 8 19 40	−0.5924	.5450	−.1845	−8.1684	0.0000
21	38 Virginis	6	+81	+ 1	9 33.1	−11 10 48	+0.6510	.5445	−.1835	−8.6937	9.9995
21	*k* Virginis	6	+56	−15	12 40.3	− 8 9 31	+0.3578	.5441	−.1827	−8.7323	.9994
21	46 Virginis	6½	+24	−46	13 7.7	− 7 42 58	−0.1919	.5441	−.1826	−8.6656	.9995
21	48 Virginis	6	+25	−45	14 43.9	− 6 9 52	−0.1729	.5440	−.1821	−8.7112	.9994
21	θ Virginis *tr.*	4½	+85	+53	17 39.1	− 3 20 11	+1.2897	.5438	−.1811	−8.9253	.9984
22	65 Virginis	6	+ 6	−69	0 9.1	+ 2 57 30	−0.5159	.5435	−.1786	−8.8678	.9988
22	66 Virginis	6	+14	−57	0 44.4	+ 3 31 42	−0.3660	.5435	−.1783	−8.8916	.9987
22	*l*² Virginis	5	+43	−26	4 21.2	+ 7 1 43	+0.1627	.5433	−.1766	−8.9870	.9979
22	94 Virginis	6	+42	−26	21 1.2	− 0 49 47	+0.1681	.5436	−.1663	−9.1572	.9955
22	95 Virginis	6	+71	− 3	21 13.7	− 0 37 42	+0.5845	.5437	−.1662	−9.1786	.9950
23	κ Virginis	4½	+81	+35	0 12.5	+ 2 15 31	+1.1397	.5440	−.1640	−9.2246	.9938
23	ξ¹ Libræ	6	+22	−44	20 17.7	− 2 17 18	−0.1501	.5458	−.1461	−9.2942	.9914
23	ξ² Libræ	6	−17	−90	21 27.2	− 1 10 1	−0.8398	.5459	−.1447	−9.2755	.9921
27	B.A.C. 6060	6½	+32	−27	10 43.9	+ 9 22 8	+0.1325	.5406	−.0251	−9.5076	.9763
28	B.A.C. 6267	6	−48	−90	2 0.0	+ 0 8 38	−1.0610	.5495	−.0010	−9.4871	.9785
28	B.A.C. 6287	6	+14	−37	3 2.8	+ 1 9 22	−0.0303	.5494	+.0007	−9.5083	.9762
28	B.A.C. 6292	6	+25	−25	3 35.3	+ 1 40 55	+0.1708	.5493	+.0018	−9.5123	.9757
28	B.A.C. 6293	6½	−14	−73	3 38.3	+ 1 43 48	−0.5372	.5493	+.0018	−9.4980	.9773
28	B.A.C. 6294	6	− 6	−60	3 39.1	+ 1 44 39	−0.3816	.5493	+.0018	−9.5012	.9770
28	B.A.C. 6536	6	+71	+28	21 17.2	− 5 11 15	+1.0116	.5466	+.0297	−9.5233	.9744
29	*d* Sagittarii	5	+71	+13	1 48.5	− 0 48 40	+0.8198	.5460	+.0369	−9.5166	.9752
29	ρ¹ Sagittarii	4	+ 2	−55	3 47.3	+ 1 6 24	−0.3164	.5455	+.0400	−9.4921	.9780
29	ρ² Sagittarii	5½	+30	−24	3 51.2	+ 1 10 10	+0.1937	.5455	+.0401	−9.5026	.9768
29	B.A.C. 6658	6	+44	−12	6 52.7	+ 4 5 54	+0.4033	.5449	+.0447	−9.5042	.9766
30	B.A.C. 7063	6	−37	−90	13 18.7	+ 9 34 37	−1.0275	.5391	+.0885	−9.4267	.9839
30	B.A.C. 7097	6	+73	+15	15 58.5	−11 50 33	+0.8596	.5380	+.0921	−9.4653	.9806
30	τ¹ Capricor.	6	− 7	−76	16 54.5	−10 56 12	−0.5792	.5378	+.0933	−9.4206	.9837
30	τ² Capricor.	5	−14	−90	17 52.2	−10 0 19	−0.6949	.5374	+.0946	−9.4246	.9841
30	B.A.C. 7145	6½	+70	+ 3	18 28.8	− 9 24 50	+0.6668	.5373	+.0955	−9.4557	.9815
Dec. 1	9 Aquarii	6	−41	−90	4 48.0	+ 0 35 17	−1.1036	.5353	+.1084	−9.3850	.9868
1	18 Aquarii	6	+ 5	−63	16 22.9	+11 48 58	−0.4312	.5332	+.1219	−9.3663	.9879
1	B.A.C. 7487	6½	+76	+17	21 27.9	− 7 15 16	+0.8937	.5324	+.1277	−9.3857	.9868
2	λ Capricor.	5½	− 3	−77	3 41.8	− 1 12 43	−0.5984	.5316	+.1342	−9.3169	.9904
2	B.A.C. 7620	6	−54	−90	7 17.9	+ 2 16 49	−1.2540	.5313	+.1377	−9.2779	.9920
2	*e*¹ Aquarii	6	+67	− 4	15 52.8	+10 36 14	+0.5555	.5304	+.1459	−9.2985	.9912
2	B.A.C. 7774	6	−21	−90	19 8.3	−10 14 8	−0.9051	.5304	+.1488	−9.2264	.9937
3	67 Aquarii	6	−30	−90	8 33.8	+ 2 47 9	−1.0580	.5300	+.1599	−9.1244	.9961
3	λ Aquarii	4	+57	−13	13 19.6	+ 7 24 21	+0.3966	.5303	+.1632	−9.1585	.9954
3	78 Aquarii	6	+42	−27	14 19.7	+ 8 22 35	+0.1508	.5304	+.1640	−9.1384	.9958
3	81 Aquarii	6	+71	− 3	17 47.8	+11 44 25	+0.5750	.5306	+.1664	−9.1309	.9960
3	82 Aquarii	6	+41	−27	18 22.8	−11 41 35	+0.1446	.5308	+.1670	−9.1029	.9965
4	φ Aquarii	4½	+73	− 3	0 21.2	− 5 54 3	+0.5868	.5311	+.1703	−9.0708	.9970
4	96 Aquarii	5½	+36	−33	2 54.9	− 3 25 1	+0.0367	.5316	+.1719	−9.0079	.9977
4	B.A.C. 8134	6½	+28	−40	3 55.5	− 2 26 13	−0.0958	.5317	+.1725	−8.9732	.9981
4	20 Piscium	6	+36	−33	17 17.8	+10 31 37	+0.0354	.5343	+.1787	−8.7852	.9992
4	24 Piscium	6½	+86	+16	19 47.4	−11 3 17	+0.9016	.5351	+.1798	−8.8313	.9990
5	B.A.C. 8365	6½	−12	−90	1 50.2	− 5 11 42	−0.8348	.5365	+.1817	−8.3343	9.9999
5	10 Ceti	6	+79	0	12 27.8	+ 5 6 7	+0.6276	.5403	+.1841	−8.1351	0.0000
6	77 Pisci. *pr.*	7	−33	−86	7 21.7	− 0 36 1	−1.1223	.5485	+.1843	+8.8651	9.9988
6	*f* Piscium	6	+90	+49	13 2.3	+ 4 53 28	+1.2618	.5514	+.1833	+8.7067	.9994
6	B.A.C. 408	6½	+68	− 6	15 20.1	+ 7 6 50	+0.5076	0.5526	+.1827	+8.8486	9.9989

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Dec. 6	μ Piscium	4½	+17	−54	18 46.9	+10 26 49	−0.3322	0.5549	+.1818	+8.9785	9.9980
7	ν Piscium	4½	+90	+52	0 0.5	− 8 30 3	+1.2767	.5580	+.1799	+8.9242	.9985
7	64 Ceti	6½	+62	− 9	13 32.1	+ 4 33 58	+0.4348	.5668	+.1724	+9.1408	.9958
7	ξ^1 Ceti	4½	+51	−17	14 15.5	+ 5 15 47	+0.2777	.5669	+.1720	+9.1555	.9955
7	B.A.C. 728	6½	−24	−80	18 45.8	+ 9 36 44	−1.0042	.5700	+.1687	+9.2416	.9930
7	B.A.C. 741	6½	+49	−19	19 20.1	+10 9 49	+0.2330	.5703	+.1683	+9.1998	.9945
7	ξ Arietis	5½	− 2	−77	19 27.7	+10 17 12	−0.6584	.5708	+.1681	+9.2401	.9933
7	B.A.C. 755	6	+ 9	−61	20 18.9	+11 6 36	−0.4712	.5709	+.1676	+9.2382	.9934
8	B.A.C. 830	6	+63	− 7	3 9.7	− 6 17 10	+0.4431	.5758	+.1616	+9.2472	.9931
8	38 Arietis	5	−35	−78	4 11.8	− 5 17 23	−1.1251	.5766	+.1606	+9.3138	.9906
8	μ Ceti	4	+90	+51	4 12.8	− 5 16 24	+1.2425	.5766	+.1605	+9.2200	.9939
8	B.A.C. 987	6½	+32	−32	15 24.9	+ 5 31 18	−0.0498	.5848	+.1482	+9.3368	.9895
8	f Tauri	4	+90	+45	23 31.1	−10 40 41	+1.1714	.5906	+.1376	+9.3347	.9896
9	Wei. III. 1085	8½	+90	+13	12 59.6	+ 2 16 49	+0.7109	.5996	+.1173	+9.4033	.9856
9	Lal. 7702	9½	−44	−73	15 0.2	+ 4 12 45	−1.1948	.6009	+.1139	+9.4612	.9810
9	Weis. IV. 24	9	+90	+18	15 33.9	+ 4 45 7	+0.7793	.6014	+.1127	+9.4098	.9852
9	Lal. 7753	7½	+39	−21	15 38.5	+ 4 49 34	+0.0818	.6014	+.1127	+9.4256	.9837
9	B.A.C. 1281	7	+ 1	−66	15 41.1	+ 4 51 58	−0.6100	.6015	+.1126	+9.4482	.9822
9	Rumk. 1103	7	+61	− 3	15 44.8	+ 4 55 37	+0.4103	.6015	+.1125	+9.4208	.9844
9	Rumk. 1108	9	+90	+40	16 10.2	+ 5 19 59	+1.1426	.6017	+.1118	+9.4012	.9858
9	Rumk. 1123	8½	+90	+56	16 56.1	+ 6 4 5	+1.2627	.6022	+.1104	+9.4002	.9858
9	48 Tauri	6	+90	+15	17 34.2	+ 6 40 40	+0.8249	.6026	+.1094	+9.4148	.9848
9	Rumk. 1136	6	+38	−22	17 58.4	+ 7 3 54	+0.0572	.6028	+.1087	+9.4372	.9831
9	γ Tauri	4	+90	+17	19 9.2	+ 8 11 57	+0.7586	.6034	+.1062	+9.4215	.9843
9	55 Tauri	7	+28	−32	19 11.0	+ 8 13 43	−0.1275	.6035	+.1062	+9.4456	.9824
9	Rumk. 1163	8	+15	−45	19 49.4	+ 8 50 34	−0.3450	.6040	+.1053	+9.4530	.9818
9	δ^1 Tauri	4	−27	−73	20 21.2	+ 9 21 5	−1.0238	.6043	+.1044	+9.4716	.9801
9	63 Tauri	6	+21	−39	20 33.5	+ 9 34 55	−0.2457	.6045	+.1039	+9.4525	.9818
9	B.A.C. 1351	6½	+30	−30	20 34.9	+ 9 34 17	−0.0955	.6045	+.1038	+9.4486	.9821
9	δ^2 Tauri	6	−17	−73	20 48.7	+ 9 47 29	−0.8819	.6046	+.1035	+9.4692	.9803
9	Lal. 8249	7½	+ 6	−57	20 55.4	+ 9 53 55	−0.5100	.6046	+.1033	+9.4602	.9811
9	Lal. 8256	8	+17	−43	20 57.8	+ 9 56 15	−0.3134	.6047	+.1032	+9.4553	.9816
9	70 Tauri	7	+87	+12	21 26.5	+10 23 50	+0.6699	.6049	+.1024	+9.4305	.9836
9	Lal. 8311	8	+90	+42	21 37.9	+10 34 46	+1.0993	.6050	+.1020	+9.4192	.9845
9	Rumk. 1188	6½	+90	+43	21 38.1	+10 34 55	+1.1003	.6050	+.1020	+9.4192	.9845
9	71 Tauri	6	+90	+36	21 43.9	+10 40 31	+1.0172	.6050	+.1019	+9.4218	.9843
9	Rumk. 1196	6	+90	+46	22 1.6	+10 57 32	+1.1405	.6051	+.1013	+9.4191	.9845
9	75 Tauri	6	+58	− 5	22 32.7	+11 27 23	+0.3595	.6054	+.1008	+9.4419	.9827
9	θ^1 Tauri	4½	+90	+18	22 35.9	+11 30 27	+0.7563	.6054	+.1002	+9.4314	.9836
9	θ^2 Tauri	4½	+90	+24	22 38.1	+11 32 36	+0.8507	.6054	+.1001	+9.4285	.9837
9	Rumk. 1212	6	−10	−73	22 52.0	+11 45 55	−0.7874	.6055	+.0998	+9.4721	.9800
9	Rumk. 1215	7	−37	−73	22 55.9	+11 49 41	−1.1259	.6055	+.0997	+9.4805	.9792
9	80 Tauri *pr.*	6	+90	+46	23 13.2	−11 53 42	+1.1347	.6057	+.0992	+9.4226	.9842
9	B.A.C. 1391	5	+78	+ 9	23 22.3	−11 45 1	+0.5977	.6058	+.0989	+9.4377	.9830
9	81 Tauri	5½	+90	+43	23 25.0	−11 48 21	+1.0990	.6058	+.0989	+9.4242	.9841
9	B.A.C. 1394	7	+84	+11	23 27.6	−11 39 54	+0.6458	.6058	+.0987	+9.4367	.9831
9	Rumk. 1227	7	+90	+35	23 41.7	−11 26 24	+1.0018	.6060	+.0982	+9.4276	.9838
9	85 Tauri	6	+90	+33	23 53.3	−11 15 14	+0.9838	.6061	+.0979	+9.4296	.9838
10	B.A.C. 1406	7	+76	+ 8	0 34.6	−10 35 35	+0.5778	.6065	+.0966	+9.4414	.9827
10	Lal. 8599	9	−11	−73	0 57.5	−10 13 34	−0.8013	.6067	+.0959	+9.4775	.9795
10	Lal. 8610	8	+32	−26	1 5.1	−10 6 17	−0.0466	.6068	+.0956	+9.4500	.9812
10	Lal. 8613	8	+21	−38	1 6.3	−10 5 7	−0.2449	.6068	+.0956	+9.4640	.9805
10	α Tauri	1	+66	+ 2	1 27.7	− 9 44 37	+0.4660	.6070	+.0949	+9.4466	.9823
10	89 Tauri	7	+90	+37	2 20.6	− 8 53 50	+1.0186	.6075	+.0922	+9.4348	.9833
10	σ^1 Tauri	5½	+90	+69	2 44.3	− 8 31 6	+1.2826	0.6079	+.0914	+9.4278	9.9838

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Dec. 10	σ² Tauri	5½	+90	+51	2 46.7	− 8 28 42	+1.1706	0.6079	+.0923	+9.4310	9.9836
10	Rumk. 1243	8	+80	+10	3 12.7	− 8 3 50	+0.6164	.6079	+.0917	+9.4469	.9823
10	Rumk. 1246	7	+22	−37	3 38.0	− 7 39 28	−0.2357	.6084	+.0906	+9.4697	.9802
10	Rumk. 1283	7	+90	+19	6 24.5	− 4 59 39	+0.7527	.6098	+.0850	+9.4508	.9820
10	Rumk. 1299	7½	+24	−34	7 37.0	− 3 50 6	−0.1957	.6105	+.0827	+9.4772	.9795
10	Rumk. 1302	7	−49	−72	7 40.6	− 3 46 42	−1.2374	.6105	+.0826	+9.5020	.9769
10	B A.C. 1526	6	+68	+ 5	9 45.4	− 1 46 53	+0.4901	.6114	+.0785	+9.4645	.9807
10	111 Tauri	6	+90	+28	20 4.2	+ 8 6 34	+0.8764	.6156	+.0570	+9.4722	.9800
10	115 Tauri	5½	+58	− 1	21 6.7	+ 9 6 33	+0.3565	.6157	+.0546	+9.4863	.9786
10	117 Tauri	6	+90	+46	21 27.2	+ 9 26 12	+1.0822	.6159	+.0534	+9.4680	.9803
10	119 Tauri	5½	+25	−30	23 0.6	+10 55 46	−0.1806	.6163	+.0503	+9.5013	.9770
10	120 Tauri	6	+29	−26	23 30.6	+11 24 27	−0.1069	.6166	+.0489	+9.5001	.9771
11	130 Tauri	6	+90	+32	4 46.6	− 7 32 34	+0.8742	.6179	+.0372	+9.4823	.9790
11	χ² Orionis	6	−30	−71	7 33.7	− 4 52 29	−1.0390	.6186	+.0308	+ 9.5281	.9737
11	B.A.C. 1930	6½	+90	+47	10 36.9	− 1 56 51	+1.0656	.6189	+.0238	+9.4820	.9790
11	χ³ Orionis	5	−20	−71	10 45.6	− 1 48 29	−0.9198	.6189	+.0236	+9.5275	.9738
11	63 Orionis	6	−25	−70	13 58.6	+ 1 16 26	−0.9806	.6192	+.0163	+9.5301	.9735
11	71 Orionis	5½	+15	−38	15 3.2	+ 2 18 18	−0.3569	.6194	+.0138	+9.5169	.9751
12	26 Geminor.	5½	+90	+47	1 24.7	−11 46 3	+1.0600	.6193	−.0106	+9.4845	.9788
12	B.A.C. 2432	6½	+20	−25	16 43.7	+ 2 54 46	−0.1059	.6162	−.0454	+9.5020	.9769
12	*f* Geminor.	6	+42	−14	23 58.3	+ 9 53 54	+0.1108	.6143	−.0589	+9.4893	.9783
13	η Geminor.	5½	−18	−71	1 30.0	+11 19 24	−0.8892	.6129	−.0647	+9.5088	.9761
13	3 Cancri	6	+27	−30	7 9.4	− 7 15 1	−0.1432	.6104	−.0761	+9.4821	.9790
13	5 Cancri	6	+89	+15	7 26.9	− 6 58 14	+0.6737	.6102	−.0770	+9.4613	.9810
13	B.A.C. 2731	6½	+25	−32	10 43.9	− 3 49 11	−0.1663	.6087	−.0835	+9.4757	.9786
13	ζ¹ Cancri	4½	−16	−72	11 34.2	− 3 0 57	−0.8712	.6081	−.0853	+9.4909	.9781
13	ζ² Cancri	7½	−16	−72	11 34.2	− 3 0 52	−0.8686	.6081	−.0853	+9.4909	.9781
13	*d*² Cancri	6	−11	−73	16 54.8	+ 2 7 1	−0.7973	.6053	−.0954	+9.4775	.9795
14	54 Cancri	6½	+23	−38	2 54.8	+11 43 15	−0.2194	.5994	−.1134	+9.4360	.9832
14	ο¹ Cancri	6	+ 7	−57	5 24.0	− 9 53 27	−0.4962	.5977	−.1179	+9.4357	.9832
14	ο² Cancri	6	− 9	−74	5 31.8	− 9 45 53	−0.7695	.5976	−.1180	+9.4426	.9826
14	π¹ Cancri	6½	−21	−75	11 31.6	− 3 59 56	−0.9562	.5939	−.1275	+9.4276	.9837
14	π² Cancri	6	−30	−75	12 41.7	− 2 52 34	−1.0617	.5931	−.1292	+9.4265	.9839
15	18 Leonis	6	+48	−17	1 38.2	+ 9 34 44	+0.2176	.5844	−.1470	+9.3324	.9897
15	B.A.C. 3345	6	+70	− 1	2 35.6	+10 31 9	+0.5247	.5844	−.1475	+9.3192	.9906
15	ν Leonis	5	−42	−77	6 37.6	− 9 36 52	−1.1912	.5810	−.1530	+9.3544	.9866
15	A Leonis	5	+78	+ 3	10 47.3	− 5 36 15	+0.6101	.5782	−.1575	+9.2664	.9925
15	B.A.C. 3538	6½	+82	+ 5	16 58.8	+ 0 21 52	+0.6446	.5741	−.1635	+9.2283	.9938
15	44 Leonis	6	+77	+ 2	18 17.5	+ 1 37 46	+0.6046	.5736	−.1647	+9.2155	.9940
15	B.A.C. 3562	6½	+76	+ 1	18 26.6	+ 1 46 30	+0.5910	.5732	−.1650	+9.2150	.9941
15	45 Leonis	6	+ 4	−68	19 19.7	+ 2 37 46	−0.5591	.5728	−.1676	+9.2579	.9927
15	ρ Leonis	4	+ 8	−62	21 35.6	+ 4 48 50	−0.4818	.5712	−.1677	+9.2390	.9934
15	49 Leonis *pr.*	6	+37	−30	22 35.7	+ 5 46 52	+0.0303	.5707	−.1685	+9.2091	.9942
16	*c* Leonis	5	+77	0	10 2.2	− 7 10 35	+0.6072	.5640	−.1765	+9.0740	.9969
16	χ Leonis	5	−24	−82	11 58.4	− 5 18 20	−1.0032	.5627	−.1776	+9.1462	.9957
16	σ Leonis	4	−23	−84	19 17.8	− 8 13 50	−0.9929	.5590	−.1812	+9.0703	.9970
17	89 Leonis	6	+90	+20	1 24.3	+ 7 40 21	+0.9389	.5558	−.1836	+8.8206	.9990
17	β Virginis	3½	+90	+15	8 56.6	− 9 2 20	+0.8788	.5526	−.1855	+8.6412	.9996
17	10 Virginis	6	−18	−88	17 56.4	− 0 20 7	−0.9324	.5490	−.1866	+8 6633	9.9995
17	13 Virginis	6	+90	+29	22 12.5	+ 3 47 40	+1.0780	.5475	−.1867	−6.9574	0.0000
17	η Virginis	3½	+90	+13	22 48.2	+ 4 22 12	+0.8416	.5474	−.1866	+7.0765	0.0000
18	γ Virginis *pr.*	2½	+20	−51	9 16.1	− 9 30 1	−0.2759	.5443	−.1856	−8.1016	0.0000
18	B.A C. 4277	6	+18	−54	10 10.3	− 8 37 31	−0.3158	.5441	−.1854	−8 1690	0.0000
18	38 Virginis	6	+88	+17	14 48.4	− 4 8 13	+0.9185	.5429	−.1843	−8.6940	9.9995
18	*k* Virginis	6	+78	− 1	17 55.6	− 1 6 55	+0.6230	0.5425	−.1835	−8.7325	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Dec. 18	46 Virginis	6½	+39	−31	18 23.1	− 0 40 18	+0.0737	0.5424	−.1833	−8.6658	9.9995
18	48 Virginis	6	+40	−30	19 59.4	+ 0 52 57	+0.0907	.5421	−.1829	−8.7114	.9994
19	65 Virginis	6	+20	−51	5 26.4	+10 2 8	−0.2653	.5408	−.1791	−8.8678	.9988
19	66 Virginis	6	+28	−42	6 1.9	+10 36 30	−0.1164	.5406	−.1789	−8.8918	.9987
19	l^2 Virginis	5	+59	−13	9 39.9	− 9 52 16	+0.4064	.5403	−.1771	−8.9871	.9979
19	80 Virginis	6	−11	−90	11 24.3	− 8 11 7	−0.8056	.5400	−.1762	−8.9154	.9985
20	94 Virginis	6	+56	−14	2 27.8	+ 6 24 11	+0.3833	.5396	−.1668	−9.1572	.9955
20	95 Virginis	6	+82	+10	2 40.4	+ 6 36 22	+0.8000	.5394	−.1667	−9.1787	.9950
21	ξ¹ Libræ	6	+32	−34	2 0.2	+ 5 12 35	+0.0169	.5407	−.1469	−9.2942	.9914
21	ξ² Libræ	6	− 7	−87	3 10.6	+ 6 20 45	−0.6775	.5410	−.1457	−9.2756	.9921
21	18 Libræ *pr.*	6½	−38	−90	4 3.9	+ 7 12 4	−1.1166	.5411	−.1447	−9.2650	.9925
21	γ Libræ	4½	+62	− 5	22 0.2	+ 0 34 54	+0.5381	.5434	−.1251	−9.3940	.9862
22	η Libræ	6	+75	+26	2 8.5	+ 4 35 19	+1.0170	.5440	−.1201	−9.4199	.9844
22	48 Libræ	4½	−59	−90	9 0.3	+11 14 9	−1.2569	.5449	−.1115	−9.3804	.9871
22	49 Libræ	5½	+74	+32	10 1.9	−11 46 16	+1.0852	.5451	−.1101	−9.4440	.9825
23	φ Ophiuchi	5	+13	−47	0 50.0	+ 2 33 37	−0.1979	.5473	−.0900	−9.4487	.9821
23	24 Scorpii	5	+67	+ 2	5 48.5	+ 7 22 36	+0.6492	.5478	−.0828	−9.4777	.9795
23	B.A.C. 5695	6	−27	−90	12 44.9	− 9 54 16	−0.8714	.5485	−.0725	−9.4556	.9815
23	29 Ophiuchi	6	+72	+54	15 29.2	− 7 15 16	+1.2442	.5489	−.0683	−9.5056	.9765
23	B.A.C. 5771	6½	+ 3	−57	18 34.3	− 4 16 5	−0.3415	.5490	−.0636	−9.4765	.9796
27	B A C. 7063	6	−57	−90	19 46.2	− 6 10 22	−1.2286	.5408	+.0857	−9.4267	.9839
27	B A C. 7097	6	+69	+ 2	22 25.7	− 3 35 45	+0.6574	.5398	+.0908	−9.4654	.9806
27	τ¹ Capricor	6	−19	−90	23 21.6	− 2 41 38	−0.7867	.5395	+.0918	−9.4297	.9837
28	τ² Capricor	5	−27	−90	0 19.1	− 1 45 52	−0.9047	.5395	+.0930	−9.4246	.9841
28	B.A.C. 7145	6½	+53	− 9	0 55.7	− 1 10 26	+0.4594	.5393	+.0940	−9.4557	.9815
28	18 Aquarii	6	−10	−88	22 49.2	− 3 57 15	−0.6784	.5343	+.1208	−9.3663	.9879
29	B.A.C. 7487	6½	+72	+ 1	3 54.8	+ 0 59 6	+0.6455	.5331	+.1264	−9.3857	.9868
29	λ Capricor.	5½	−20	−90	10 9.8	+ 7 2 48	−0.8622	.5320	+.1329	−9.3169	.9904
29	e¹ Aquarii	6	+47	−19	22 24.7	− 5 4 21	+0.2835	.5297	+.1448	−9.2985	.9912
29	e² Aquarii	6	+78	+33	22 27.3	− 5 1 50	+1.1099	.5297	+.1449	−9.3254	.9900
30	B.A.C. 7774	6	−44	−90	1 2.0	− 2 33 4	−1.1901	.5294	+.1477	−9.2265	.9937
30	λ Aquarii	4	+39	−29	20 4.7	− 8 3 4	+0.1055	.5275	+.1617	−9.1585	.9954
30	78 Aquarii	6	+25	−43	21 5.5	− 7 4 0	−0.1431	.5274	+.1624	−9.1384	.9958
31	81 Aquarii	6	+50	−19	0 36.6	− 3 39 11	+0.2831	.5272	+.1648	−9.1309	.9960
31	82 Aquarii	6	+25	−44	1 12.2	− 3 4 37	−0.1517	.5272	+.1650	−9.1029	.9965
31	h¹ Aquarii	6	+82	+55	2 32.3	− 1 46 53	+1.2981	.5271	+.1660	−9.1649	.9953
31	φ Aquarii	4½	+51	−19	7 16.5	+ 2 48 49	+0.2921	.5271	+.1686	−9.0769	.9970
31	96 Aquarii	5½	+19	−51	9 52.9	+ 5 20 35	−0.2644	.5272	+.1701	−9.0080	.9977
31	B.A.C. 8134	6½	+ 2	−75	10 54.6	+ 6 20 29	−0.5804	0.5272	+.1706	−8.9732	9.9981

Notes. — B. A. C., British Association Catalogue.
Lal., Lalande's *Histoire Céleste Française.* Bailey's Ed.
Rumk., Rumker's Catalogue.
Weis., Weisse's *Positiones Mediae Stellarum Fixarum.*

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1867.

Date.		Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
				Washington		Angle from		Washington		Angle from		
				Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
				h m	h m	°	°	h m	h m	°	°	h m
Jan.	12	77 Piscium *pr*	7	6 9	10 40	314	5	7 1	11 33	80	131	0 52
	16	B.A.C. 1526	6	7 43	11 58	243	294	8 42	12 58	121	175	1 0
	17	130 Tauri	6	0 54	5 6	258	203	1 51	6 4	119	64	0 58
	17	B A.C. 1930	6½	9 26	13 38	188	242	9 41	13 53	162	216	0 15
	18	λ Geminor. ‡	3½	14 17	18 24	218	266	14 52	18 58	124	169	0 35
	19	1 Cancri	6	2 51	6 55	247	193	3 49	7 53	106	52	0 58
	28	49 Libræ	5½	13 17	16 45	251	206	14 44	18 11	71	38	1 27
	31	B.A C. 6292	6	14 12	17 27	263	219	15 28	18 43	86	51	1 16
Feb.	1	ρ¹ Sagittarii †	4	14 15	17 26	320	272	14 57	18 8	38	352	0 42
	1	ρ² Sagittarii	5½	14 42	17 53	179	132	Star 0′.8	south of	☾'s	limb.	
	12	70 Tauri	7	2 43	5 13	195	157	Star 0′.3	south of	☾'s	limb.	
	12	Rumk. 1203		3 51	6 21	266	252	5 10	7 40	117	141	1 19
	12	75 Tauri	6	3 55	6 24	277	264	5 17	7 47	106	132	1 22
	12	Rumk. 1210		4 30	7 0	219	224	5 9	7 39	162	185	0 39
	12	B.A.C. 1391	5	5 39	8 9	201	233	5 56	8 26	176	214	0 17
	12	Rumk. 1232		6 21	8 50	294	337	7 33	10 2	78	130	1 12
	12	B.A.C. 1406	7	7 13	9 42	223	272	7 57	10 26	147	199	0 44
	12	Rumk. 1238	10	7 27	9 56	265	316	8 37	11 7	103	157	1 10
	12	α Tauri	1	8 13	10 43	262	315	9 17	11 46	104	159	1 3
	12	Rumk. 1241		10 4	12 33	256	310	10 57	13 26	107	158	0 53
	12	Rumk. 1243	8	10 17	12 46	254	307	11 8	13 37	109	160	0 52
	12	Rumk. 1247 ‡		10 45	13 14	295	346	11 33	14 2	69	107	0 48
	12	Rumk. 1254 ‡		10 59	13 28	289	340	11 48	14 17	75	123	0 49
	14	26 Geminor.	5½	10 52	13 13	297	351	11 41	14 2	46	100	0 49
	17	ξ Leonis	6	5 45	7 54	276	226	6 52	9 2	55	10	1 7
	18	48 Leonis	6	10 29	12 34	306	307	11 8	13 13	3	18	0 38
	19	τ Leonis	5	10 42	12 43	333	320	Star 1′.2	north of	☾'s	limb.	
	21	θ Virginis, *tr.*	4½	10 49	12 43	298	268	11 37	13 30	8	346	0 47
	24	η Libræ	6	16 6	17 47	284	292	17 26	19 7	47	71	1 21
Mar.	11	70 Tauri *	7	11 20	12 3	255	304	12 7	12 49	111	155	0 47
	12	111 Tauri	6	11 20	11 59	275	327	12 12	12 51	82	131	0 52
	15	29 Cancri ‡	6	14 46	15 12	266	317	15 36	16 2	67	115	0 50
April	8	B.A.C. 1526	6	7 47	6 40	279	330	8 54	7 47	78	132	1 7
	9	B.A.C. 1930	6½	10 11	9 0	247	301	11 9	9 58	103	157	0 58
	11	1 Cancri	6	7 12	5 53	237	219	8 30	7 11	199	219	1 18
	18	96 Virginis	6½	12 51	11 4	231	213	14 16	12 29	78	82	1 25
	20	η Libræ	6	10 36	8 41	229	181	11 37	9 42	92	48	1 1
	21	24 Scorpii	5	15 28	13 28	298	283	16 39	14 39	37	38	1 11
May	1	MERCURY †		18 42	16 2	279	228	19 41	17 2	119	68	1 0
	5	α Tauri	1	9 53	6 59	263	317	10 46	7 53	102	153	0 54
	5	Rumk. 1241 ‡		11 25	8 31	259	308	12 12	9 18	105	151	0 47
	5	Rumk. 1243 *	8	11 36	8 42	257	305	12 22	9 28	108	152	0 46
	7	26 Geminor.	5½	10 36	7 35	259	314	11 37	8 36	84	138	1 1
	11	48 Leonis	6	13 2	9 45	294	336	13 51	10 33	19	66	0 48
June	9	B.A.C. 4043	6½	11 59	6 47	298	300	12 46	7 34	6	22	0 47
	18	B.A.C. 6658	6	15 42	9 54	263	223	17 3	11 15	98	69	1 21
	26	64 Ceti	6½	20 8	13 48	275	223	21 3	14 43	125	74	0 55
	26	ξ¹ Ceti	4½	20 58	14 37	302	251	21 57	15 37	101	49	1 0
July	9	κ Virginis	4½	14 41	7 32	236	245	16 8	8 58	78	106	1 26
	11	49 Libræ *	5½	21 33	14 14	214	264	22 11	14 52	137	188	0 38
	12	24 Scorpii	5	15 51	8 29	292	282	17 8	9 46	43	51	1 18
	14	B.A C. 6292 ‡	6	22 43	15 12	322	7	23 32	16 1	55	104	0 49
	15	ρ² Sagittarii	5½	22 49	15 14	294	334	23 58	16 23	91	139	1 9

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1867.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
July 20	96 Aquarii	5½	18 26	10 32	6	317	18 40	10 46	30	342	0 14
24	B.A.C. 830 *	6	19 24	11 14	342	294	19 53	11 43	52	2	0 29
26	Rumk. 1283	7	23 50	15 32	281	227	0 52	16 33	108	55	1 1
27	130 Tauri	6	22 47	14 25	291	242	23 36	15 14	86	34	0 50
Aug. 4	θ Virginis, *tr* ‡	4½	18 27	9 35	203	254	19 6	10 14	124	175	0 39
16	81 Aquarii *	6	16 26	6 46	236	185	17 4	7 24	153	102	0 39
16	82 Aquarii †	6	17 15	7 35	341	290	17 50	8 10	50	1	0 35
22	γ Tauri	4	20 55	10 50	318	268	21 39	11 35	70	18	0 44
22	70 Tauri	7	23 22	13 17	322	268	0 11	14 6	70	16	0 49
22	Lal. 8311	8	23 44	13 40	199	146	23 48	13 44	192	139	0 4
22	Rumk. 1188	6½	23 47	13 42	196	142	Star 0'.1	north of	☾'s	limb.	
22	71 Tauri	6	23 34	13 30	239	185	0 18	14 13	153	100	0 43
22	Rumk. 1200		0 29	14 24	196	143	Star 2'.0	south of	☾'s	limb.	
22	θ¹ Tauri	4½	0 35	14 31	285	232	1 45	15 40	108	60	1 10
22	θ² Tauri	4½	0 37	14 32	264	211	1 42	15 37	129	80	1 5
22	Rumk. 1210		1 0	14 56	321	269	1 59	15 54	72	25	0 58
22	B.A.C. 1391	5	1 44	15 39	305	256	2 56	16 51	88	52	1 12
22	81 Tauri	5½	1 54	15 49	223	177	2 29	16 24	169	128	0 35
22	B.A.C. 1394	7	1 48	15 43	293	245	3 4	16 59	99	66	1 16
22	Rumk. 1227	7	2 33	16 28	196	155	Star 3'.4	south of	☾'s	limb.	
22	85 Tauri	6	2 51	16 46	195	158	Star 3'.2	south of	☾'s	limb.	
23	111 Tauri	6	23 11	13 2	297	245	0 4	13 56	85	31	0 53
23	117 Tauri	6	0 49	14 40	227	172	1 26	15 17	156	102	0 37
Sept. 8	B.A.C. 6658	6	17 32	6 21	259	235	19 1	7 51	111	107	1 30
12	λ Aquarii	4	22 4	10 37	262	251	23 14	11 47	159	160	1 10
12	78 Aquarii	6	23 38	12 11	288	301	0 59	13 32	125	156	1 21
12	82 Aquarii *	6	4 52	17 25	213	264	5 5	17 38	186	137	0 13
13	20 Piscium	6	2 24	14 53	203	302	3 36	16 5	116	143	1 12
14	10 Ceti	6	18 43	7 9	269	218	19 41	8 6	130	81	0 58
15	B.A.C. 408	6½	21 43	10 4	297	251	22 55	11 17	113	75	1 13
16	64 Ceti	6½	20 31	8 49	20	328	Star 0'.1	north of	☾'s	limb.	
16	B.A.C. 741	6½	3 51	16 7	307	338	5 6	17 22	94	138	1 15
18	Wei. III. 1085	8½	21 36	9 45	328	278	22 15	10 24	62	10	0 39
18	Wei. IV. 24	9	0 20	12 29	277	225	1 29	13 38	118	71	1 9
18	Rumk. 1103	7	1 24	13 33	18	329	Star 1'.3	north of	☾'s	limb.	
18	48 Tauri	6	3 30	15 39	223	206	4 9	16 18	167	167	0 39
18	γ Tauri	4	6 0	18 8	227	266	6 47	18 56	152	199	0 47
20	B.A.C. 1930 †	6½	22 22	10 24	275	229	23 12	11 13	98	48	0 49
29	96 Virginis *	6	19 49	7 16	346	37	Star 1'.3	north of	☾'s	limb.	
Oct. 2	24 Scorpii ‡	5	21 17	8 32	248	296	22 18	9 33	108	158	1 1
10	φ Aquarii	4½	17 55	4 39	256	206	18 51	5 35	139	92	0 56
10	96 Aquarii	5½	22 6	8 49	25	7	Star 0'.0	north of	☾'s	limb.	
15	Wei. III. 1085	8½	8 14	18 36	205	259	8 35	18 57	169	222	0 21
16	Rumk. 1283	7	23 42	10 1	284	230	0 43	11 2	105	52	1 1
16	B.A.C. 1526	6	4 20	14 38	287	272	5 41	15 59	93	117	1 22
17	130 Tauri	6	23 19	9 34	276	235	0 13	10 28	102	48	0 54
19	5 Cancri	6	6 8	16 14	283	242	7 24	17 30	60	45	1 16
Nov. 5	ε¹ Aquarii	6	22 47	7 48	258	269	23 55	8 55	152	178	1 8
6	81 Aquarii	6	1 0	9 56	206	236	Star 0'.2	south of	☾'s	limb.	
6	82 Aquarii	6	1 33	10 29	304	339	2 46	11 42	106	150	1 13
10	B.A.C. 830 ‡	6	8 44	17 24	252	304	9 29	18 9	131	180	0 46
12	48 Tauri †	6	20 39	5 12	274	228	21 26	6 0	113	63	0 48
12	γ Tauri	4	22 9	6 42	274	222	23 2	7 35	116	63	0 54

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1867.

Date.		Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
				Washington		Angle from		Washington		Angle from		
				Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
				h m	h m	°	°	h m	h m	°	°	h m
Nov.	12	70 Tauri	7	0 44	9 16	260	207	1 45	10 17	134	87	1 1
	12	75 Tauri	6	2 19	10 51	305	261	3 30	12 3	87	63	1 12
	12	θ^1 Tauri	4½	2 44	11 17	196	158	Star 1′.3	south of	☾'s	limb.	
	12	B.A.C. 1391	5	3 30	12 2	240	215	4 26	12 59	149	150	0 57
	12	B.A.C. 1394	7	3 46	12 18	221	203	4 23	12 55	167	166	0 37
	12	B.A.C. 1406	7	5 24	13 56	228	255	6 12	14 45	151	192	0 49
	12	α Tauri	1	6 33	15 5	256	300	7 40	16 13	118	170	1 8
	12	Rumk. 1243	8	8 55	17 27	232	286	9 40	18 12	135	189	0 45
	13	111 Tauri	6	23 39	8 8	234	180	0 17	8 46	149	95	0 38
	13	115 Tauri	5½	1 5	9 34	343	288	1 35	10 4	40	346	0 30
	20	η Virginis	3½	7 56	15 56	214	165	8 52	16 53	101	57	0 57
	20	B A C. 5658	6	0 30	7 56	316	10	1 21	8 47	78	130	0 51
Dec.	5	10 Ceti *	6	6 34	13 36	219	270	6 53	13 55	177	228	0 19
	7	64 Ceti	6½	7 32	14 26	273	325	8 27	15 21	116	166	0 55
	7	ξ^1 Ceti †	4½	8 22	15 16	310	1	9 10	16 4	77	125	0 47
	9	Wei. IV. 24	9	10 3	16 49	186	238	Star 2′.7	south of	☾'s	limb.	
	9	Rumk. 1103 ‡	7	9 52	16 37	288	339	10 43	17 29	83	132	0 52
	10	Rumk. 1283	7	21 59	4 42	277	227	22 49	5 32	109	57	0 51
	10	B.A.C. 1526	6	1 40	8 22	283	231	2 50	9 32	106	62	1 10
	15	A Leonis †	5	2 48	9 11	222	173	3 29	9 52	117	66	0 41
	15	B.A.C. 3538	6½	10 20	16 42	221	223	11 33	17 55	90	118	1 13
	15	44 Leonis	6	12 6	18 28	254	289	13 18	19 40	58	103	1 12
	15	B A C. 3562	6½	12 18	18 40	250	297	13 28	19 50	52	99	1 10
	18	k Virginis	6	10 34	16 44	227	193	11 52	18 2	77	60	1 18
	31	φ Aquarii	4½	2 53	8 13	324	8	3 52	9 13	83	132	1 0

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct vision*, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted image*, add 180° to the angles given.

WASHINGTON MEAN TIME.

JANUARY, FEBRUARY.

The Satellites are not visible during the months of January and February, Jupiter being too near the Sun.

MARCH.

			d	h	m	s
I.	Eclipse	Disapp.	1	15	29	25.5
I.	Occult.	Reapp.	1	18	15	
II.	Shadow	Ingress	1	18	55	
II.	Transit	Ingress	1	19	52	
II.	Shadow	Egress	1	21	52	
II.	Transit	Egress	1	22	49	
III.	Shadow	Ingress	2	2	33	
III.	Transit	Ingress	2	4	29	
III.	Shadow	Egress	2	6	16	
III.	Transit	Egress	2	8	12	
I.	Shadow	Ingress	2	12	45	
I.	Transit	Ingress	2	13	14	
I.	Shadow	Egress	2	15	6	
I.	Transit	Egress	2	15	35	
I.	Eclipse	Disapp.	3	9	57	57.7
I.	Occult.	Reapp.	3	12	46	
II.	Eclipse	Disapp.	3	13	51	18.9
II.	Occult.	Reapp.	3	17	47	
I.	Shadow	Ingress	4	7	14	
I.	Transit	Ingress	4	7	44	
I.	Shadow	Egress	4	9	34	
I.	Transit	Egress	4	10	5	
I.	Eclipse	Disapp.	5	4	26	26.3
I.	Occult.	Reapp.	5	7	16	
II.	Shadow	Ingress	5	8	12	
II.	Transit	Ingress	5	9	17	
II.	Shadow	Egress	5	11	9	
II.	Transit	Egress	5	12	13	
III.	Eclipse	Disapp.	5	16	26	8.8
III.	Occult.	Reapp.	5	22	14	
I.	Shadow	Ingress	6	1	43	
I.	Transit	Ingress	6	2	15	
I.	Shadow	Egress	6	4	3	
I.	Transit	Egress	6	4	35	
IV.	Shadow	Ingress	6	13	17	
IV.	Shadow	Egress	6	18	13	
IV.	Transit	Ingress	6	18	27	
I.	Eclipse	Disapp.	6	22	54	56.3
IV.	Transit	Egress	6	23	22	
I.	Occult.	Reapp.	7	1	46	
II.	Eclipse	Disapp.	7	3	9	23.7
II.	Occult.	Reapp.	7	7	12	
I.	Shadow	Ingress	7	20	11	
I.	Transit	Ingress	7	20	45	
I.	Shadow	Egress	7	22	31	
I.	Transit	Egress	7	23	5	
I.	Eclipse	Disapp.	8	17	23	25.1
I.	Occult.	Reapp.	8	20	16	
II.	Shadow	Ingress	8	21	30	
II.	Transit	Ingress	8	22	41	
II.	Shadow	Egress	9	0	26	
II.	Transit	Egress	9	1	38	
III.	Shadow	Ingress	9	6	34	
III.	Transit	Ingress	9	8	58	
III.	Shadow	Egress	9	10	17	
III.	Transit	Egress	9	12	41	
I.	Shadow	Ingress	9	14	40	
I.	Transit	Ingress	9	15	16	
I.	Shadow	Egress	9	17	0	
I.	Transit	Egress	9	17	35	
I.	Eclipse	Disapp.	10	11	51	56.7
I.	Occult.	Reapp.	10	14	47	
II.	Eclipse	Disapp.	10	16	28	24.1
II.	Occult.	Reapp.	10	20	38	
I.	Shadow	Ingress	11	9	8	
I.	Transit	Ingress	11	9	46	
I.	Shadow	Egress	11	11	29	
I.	Transit	Egress	11	12	6	
I.	Eclipse	Disapp.	12	6	20	24.5
I.	Occult.	Reapp.	12	9	17	
II.	Shadow	Ingress	12	10	47	
II.	Transit	Ingress	12	12	6	
II.	Shadow	Egress	12	13	43	
II.	Transit	Egress	12	15	2	
III.	Eclipse	Disapp.	12	20	26	6.3
III.	Occult.	Reapp.	13	2	43	
I.	Shadow	Ingress	13	3	37	
I.	Transit	Ingress	13	4	16	
I.	Shadow	Egress	13	5	58	
I.	Transit	Egress	13	6	36	
I.	Eclipse	Disapp.	14	0	48	53.7
I.	Occult.	Reapp.	14	3	47	
II.	Eclipse	Disapp.	14	5	46	25.3
II.	Occult.	Reapp.	14	10	3	

WASHINGTON MEAN TIME.

MARCH.

			d	h	m	s				d	h	m	s
IV.	Eclipse	Disapp.	14	20	59	56.5	I.	Transit	Egress	22	3	8	
I.	Shadow	Ingress	14	22	5		I.	Eclipse	Disapp.	22	21	11	15.3
I.	Transit	Ingress	14	22	47		I.	Occult.	Reapp.	23	0	17	
I.	Shadow	Egress	15	0	26		II.	Shadow	Ingress	23	2	39	
I.	Transit	Egress	15	1	7		II.	Transit	Ingress	23	4	18	
IV.	Eclipse	Reapp.	15	1	44	0.7	II.	Shadow	Egress	23	5	35	
IV.	Occult.	Disapp.	15	3	22		II.	Transit	Egress	23	7	14	
IV.	Occult.	Reapp.	15	8	17		IV.	Shadow	Ingress	23	7	27	
I.	Eclipse	Disapp.	15	19	17	21.7	IV.	Shadow	Egress	23	12	23	
I.	Occult.	Reapp.	15	22	17		III.	Shadow	Ingress	23	14	34	
II.	Shadow	Ingress	16	0	4		IV.	Transit	Ingress	23	15	5	
II.	Transit	Ingress	16	1	30		III.	Transit	Ingress	23	17	53	
II.	Shadow	Egress	16	3	1		III.	Shadow	Egress	23	18	17	
II.	Transit	Egress	16	4	26		I.	Shadow	Ingress	23	18	28	
III.	Shadow	Ingress	16	10	34		I.	Transit	Ingress	23	19	18	
III.	Transit	Ingress	16	13	27		IV.	Transit	Egress	23	20	1	
III.	Shadow	Egress	16	14	17		I.	Shadow	Egress	23	20	49	
I.	Shadow	Ingress	16	16	34		III.	Transit	Egress	23	21	36	
III.	Transit	Egress	16	17	10		I.	Transit	Egress	23	21	38	
I.	Transit	Ingress	16	17	17		I.	Eclipse	Disapp.	24	15	39	45.8
I.	Shadow	Egress	16	18	55		I.	Occult.	Reapp.	24	18	48	
I.	Transit	Egress	16	19	37		II.	Eclipse	Disapp.	24	21	42	2.3
I.	Eclipse	Disapp.	17	13	45	52.7	II.	Occult.	Reapp.	25	2	18	
I.	Occult.	Reapp.	17	16	47		I.	Shadow	Ingress	25	12	57	
II.	Eclipse	Disapp.	17	19	5	18.7	I.	Transit	Ingress	25	13	48	
II.	Occult.	Reapp.	17	23	29		I.	Shadow	Egress	25	15	17	
I.	Shadow	Ingress	18	11	2		I.	Transit	Egress	25	16	8	
I.	Transit	Ingress	18	11	47		I.	Eclipse	Disapp.	26	10	8	2.2
I.	Shadow	Egress	18	13	23		I.	Occult.	Reapp.	26	13	17	
I.	Transit	Egress	18	14	8		II.	Shadow	Ingress	26	15	56	
I.	Eclipse	Disapp.	19	8	14	19.8	II.	Transit	Ingress	26	17	41	
I.	Occult.	Reapp.	19	11	17		II.	Shadow	Egress	26	18	53	
II.	Shadow	Ingress	19	13	22		II.	Transit	Egress	26	20	37	
II.	Transit	Ingress	19	14	54		III.	Eclipse	Disapp.	27	4	26	31.7
II.	Shadow	Egress	19	16	8		I.	Shadow	Ingress	27	7	25	
II.	Transit	Egress	19	17	50		I.	Transit	Ingress	27	8	18	
III.	Eclipse	Disapp.	20	0	26	2.0	I.	Shadow	Egress	27	9	46	
I.	Shadow	Ingress	20	5	31		I.	Transit	Egress	27	10	38	
I.	Transit	Ingress	20	6	17		III.	Occult.	Reapp.	27	11	36	
III.	Occult.	Reapp.	20	7	10		I.	Eclipse	Disapp.	28	4	36	40.3
I.	Shadow	Egress	20	7	52		I.	Occult.	Reapp.	28	7	48	
I.	Transit	Egress	20	8	38		II.	Eclipse	Disapp.	28	10	59	55.9
I.	Eclipse	Disapp.	21	2	42	48.5	II.	Occult.	Reapp.	28	15	42	
I.	Occult.	Reapp.	21	5	47		I.	Shadow	Ingress	29	1	54	
II.	Eclipse	Disapp.	21	8	23	15.8	I.	Transit	Ingress	29	2	48	
II.	Occult.	Reapp.	21	12	53		I.	Shadow	Egress	29	4	14	
I.	Shadow	Ingress	22	0	0		I.	Transit	Egress	29	5	8	
I.	Transit	Ingress	22	0	48		I.	Eclipse	Disapp.	29	23	5	6.6
I.	Shadow	Egress	22	2	20		I.	Occult.	Reapp.	30	2	17	

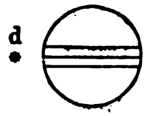
WASHINGTON MEAN TIME.

MARCH.

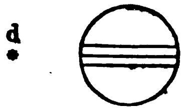
			d	h	m	s				d	h	m	s
II.	Shadow	Ingress	30	5	13		I.	Shadow	Egress	30	22	43	
II.	Transit	Ingress	30	7	5		I.	Transit	Egress	30	23	38	
II.	Shadow	Egress	30	8	10		III.	Transit	Egress	31	2	1	
II.	Transit	Egress	30	10	1		IV.	Eclipse	Disapp.	31	15	8	23.0
III.	Shadow	Ingress	30	18	34		I.	Eclipse	Disapp.	31	17	33	36.8
I.	Shadow	Ingress	30	20	23		IV.	Eclipse	Reapp.	31	19	52	24.8
I.	Transit	Ingress	30	21	18		I.	Occult.	Reapp.	31	20	47	
III.	Shadow	Egress	30	22	17		IV.	Occult.	Disapp.	31	23	50	
III.	Transit	Ingress	30	22	18								

Phases of the Eclipses of the Satellites for an Inverting Telescope.

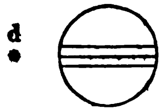
I.



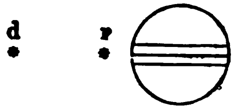
III.



II.



IV.



APRIL.

			d	h	m	s				d	h	m	s
II.	Eclipse	Disapp.	1	0	18	35.1	III.	Occult.	Reapp.	3	16	0	
IV.	Occult.	Reapp.	1	4	46		I.	Eclipse	Disapp.	4	6	30	30.3
II.	Occult.	Reapp.	1	5	7		I.	Occult.	Reapp.	4	9	47	
I.	Shadow	Ingress	1	14	51		II.	Eclipse	Disapp.	4	13	36	25.4
I.	Transit	Ingress	1	15	48		II.	Occult.	Reapp.	4	18	31	
I.	Shadow	Egress	1	17	11		I.	Shadow	Ingress	5	3	48	
I.	Transit	Egress	1	18	8		I.	Transit	Ingress	5	4	48	
I.	Eclipse	Disapp.	2	12	2	2.4	I.	Shadow	Egress	5	6	8	
I.	Occult.	Reapp.	2	15	17		I.	Transit	Egress	5	7	8	
II.	Shadow	Ingress	2	18	31		I.	Eclipse	Disapp.	6	0	58	55.8
II.	Transit	Ingress	2	20	28		I.	Occult.	Reapp.	6	4	17	
II.	Shadow	Egress	2	21	27		II.	Shadow	Ingress	6	7	48	
II.	Transit	Egress	2	23	24		II.	Transit	Ingress	6	9	51	
III.	Eclipse	Disapp.	3	8	26	25.8	II.	Shadow	Egress	6	10	44	
I.	Shadow	Ingress	3	9	20		II.	Transit	Egress	6	12	47	
I.	Transit	Ingress	3	10	18		I.	Shadow	Ingress	6	22	17	
I.	Shadow	Egress	3	11	39		III.	Shadow	Ingress	6	22	34	
III.	Eclipse	Reapp.	3	11	59	45.4	I.	Transit	Ingress	6	23	18	
III.	Occult.	Disapp.	3	12	17		I.	Shadow	Egress	7	0	37	
I.	Transit	Egress	3	12	38		I.	Transit	Egress	7	1	38	

WASHINGTON MEAN TIME.

APRIL.

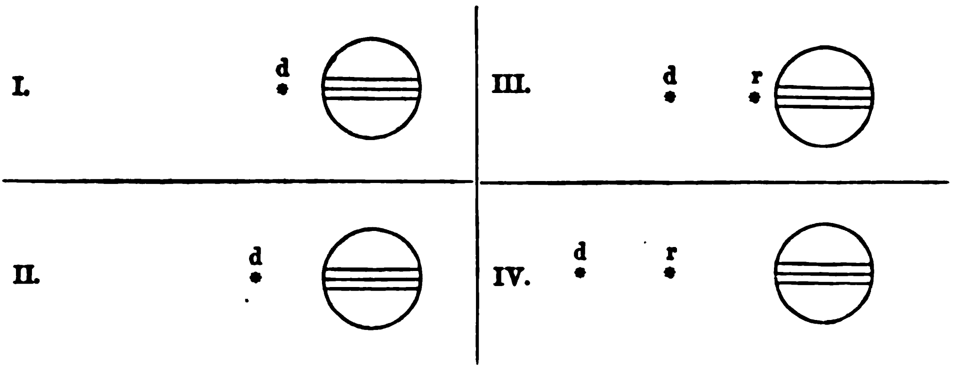
				d	h	m	s					d	h	m	s
III.	Shadow	Egress		7	2	17		III.	Transit	Ingress		14	7	2	
III.	Transit	Ingress		7	2	41		III.	Transit	Egress		14	10	44	
III.	Transit	Egress		7	6	23		I.	Eclipse	Disapp.		14	21	21	12.9
I.	Eclipse	Disapp.		7	19	27	25.3	I.	Occult.	Reapp.		15	0	46	
I.	Occult.	Reapp.		7	22	47		II.	Eclipse	Disapp.		15	5	31	7.7
II.	Eclipse	Disapp.		8	2	54	56.9	II.	Occult	Reapp.		15	10	40	
II.	Occult.	Reapp.		8	7	54		I.	Shadow	Ingress		15	18	39	
I.	Shadow	Ingress	W.	8	16	45		I.	Transit	Ingress		15	19	47	
I.	Transit	Ingress		8	17	48		I.	Shadow	Egress		15	21	0	
I.	Shadow	Egress		8	19	6		I.	Transit	Egress		15	22	7	
I.	Transit	Egress		8	20	8		I.	Eclipse	Disapp.		16	15	40	37.7
IV.	Shadow	Ingress		9	1	37		I.	Occult.	Reapp.		16	19	15	
IV.	Shadow	Egress		9	6	33		II.	Shadow	Ingress		16	23	41	
IV.	Transit	Ingress		9	11	24		II.	Transit	Ingress		17	1	58	
I.	Eclipse	Disapp.		9	13	55	50.9	II.	Shadow	Egress		17	2	37	
IV.	Transit	Egress	W.	9	16	18		II.	Transit	Egress		17	4	54	
I.	Occult.	Reapp.		9	17	16		IV.	Eclipse	Disapp.		17	9	16	57.5
II.	Shadow	Ingress		9	21	6		I.	Shadow	Ingress		17	13	8	
II.	Transit	Ingress		9	23	13		IV.	Eclipse	Reapp.		17	14	0	38.1
II.	Shadow	Egress		10	0	2		I.	Transit	Ingress		17	14	17	
II.	Transit	Egress		10	2	9		I.	Shadow	Egress		17	15	28	
I.	Shadow	Ingress		10	11	14		III.	Eclipse	Disapp.	W.	17	16	25	54.9
I.	Transit	Ingress		10	12	18		I.	Transit	Egress	W.	17	16	37	
III.	Eclipse	Disapp.		10	12	26	23.9	IV.	Occult.	Disapp.		17	19	54	
I.	Shadow	Egress		10	13	34		III.	Eclipse	Reapp.		17	19	59	11.3
I.	Transit	Egress		10	14	38		III.	Occult.	Disapp.		17	20	59	
III.	Eclipse	Reapp.		10	15	59	42.3	III.	Occult.	Reapp.		18	0	41	
III.	Occult.	Disapp.	W.	10	16	38		IV.	Occult.	Reapp.		18	0	49	
III.	Occult.	Reapp.		10	20	21		I.	Eclipse	Disapp.		18	10	18	5.2
I.	Eclipse	Disapp.		11	8	24	18.5	I.	Occult.	Reapp.		18	13	45	
I.	Occult.	Reapp.		11	11	46		II.	Eclipse	Disapp.		18	18	48	51.0
II.	Eclipse	Disapp.	W.	11	16	12	43.6	II.	Occult.	Reapp.		19	0	2	
II.	Occult.	Reapp.		11	21	17		I.	Shadow	Ingress		19	7	36	
I.	Shadow	Ingress		12	5	42		I.	Transit	Ingress		19	8	46	
I.	Transit	Ingress		12	6	47		I.	Shadow	Egress		19	9	57	
I.	Shadow	Egress		12	8	3		I.	Transit	Egress		19	11	6	
I.	Transit	Egress		12	9	8		I.	Eclipse	Disapp.		20	4	46	29.9
I.	Eclipse	Disapp.		13	2	52	43.4	I.	Occult.	Reapp.		20	8	14	
I.	Occult.	Reapp.		13	6	16		II.	Shadow	Ingress		20	12	58	
II.	Shadow	Ingress		13	10	23		II.	Transit	Ingress		20	15	20	
II.	Transit	Ingress		13	12	36		II.	Shadow	Egress	W.	20	15	54	
II.	Shadow	Egress		13	13	19		II.	Transit	Egress		20	18	16	
II.	Transit	Egress		13	15	32		I.	Shadow	Ingress		21	2	5	
I.	Shadow	Ingress		14	0	11		I.	Transit	Ingress		21	3	16	
I.	Transit	Ingress		14	1	17		I.	Shadow	Egress		21	4	25	
I.	Shadow	Egress		14	2	31		I.	Transit	Egress		21	5	35	
III.	Shadow	Ingress		14	2	34		III.	Shadow	Ingress		21	6	35	
I.	Transit	Egress		14	3	37		III.	Shadow	Egress		21	10	17	
III.	Shadow	Egress		14	6	17		III.	Transit	Ingress		21	11	21	

WASHINGTON MEAN TIME.

APRIL.

				d	h	m	s					d	h	m	s
III.	Transit	Egress		21	15	3		I.	Shadow	Ingress		26	9	30	
I.	Eclipse	Disapp.		21	23	14	59.6	I.	Transit	Ingress		26	10	44	
I.	Occult.	Reapp.		22	2	44		I.	Shadow	Egress		26	11	50	
II.	Eclipse	Disapp.		22	8	7	7.4	IV.	Transit	Egress		26	12	5	
II.	Occult.	Reapp.		22	13	25		I.	Transit	Egress		26	13	4	
I.	Shadow	Ingress		22	20	33		I.	Eclipse	Disapp.		27	6	40	15.9
I.	Transit	Ingress		22	21	45		I.	Occult.	Reapp.		27	10	12	
I.	Shadow	Egress		22	22	54		II.	Shadow	Ingress	W.	27	15	33	
I.	Transit	Egress		23	0	5		II.	Transit	Ingress		27	18	3	
I.	Eclipse	Disapp.		23	17	43	24.4	II.	Shadow	Egress		27	18	29	
I.	Occult.	Reapp.		23	21	13		II.	Transit	Egress		27	20	58	
II.	Shadow	Ingress		24	2	16		I.	Shadow	Ingress		28	3	59	
II.	Transit	Ingress		24	4	41		I.	Transit	Ingress		28	5	13	
II.	Shadow	Egress		24	5	12		I.	Shadow	Egress		28	6	19	
II.	Transit	Egress		24	7	37		I.	Transit	Egress		28	7	33	
I.	Shadow	Ingress		24	15	2		III.	Shadow	Ingress		28	10	35	
I.	Transit	Ingress	W.	24	16	14		III.	Shadow	Egress		28	14	17	
I.	Shadow	Egress		24	17	22		III.	Transit	Ingress	W.	28	15	37	
I.	Transit	Egress		24	18	34		III.	Transit	Egress		28	19	19	
III.	Eclipse	Disapp.		24	20	25	23.3	I.	Eclipse	Disapp.		29	1	8	45.6
III.	Eclipse	Reapp.		24	23	58	36.3	I.	Occult.	Reapp.		29	4	41	
III.	Occult.	Disapp.		25	1	16		II.	Eclipse	Disapp.		29	10	42	56.2
III.	Occult.	Reapp.		25	4	57		II.	Occult.	Reapp.	W.	29	16	8	
I.	Eclipse	Disapp.		25	12	11	51.9	I.	Shadow	Ingress		29	22	27	
I.	Occult.	Reapp.	W.	25	15	33		I.	Transit	Ingress		29	23	43	
IV.	Shadow	Ingress		25	19	47		I.	Shadow	Egress		30	0	47	
II.	Eclipse	Disapp.		25	21	24	47.4	I.	Transit	Egress		30	2	2	
IV.	Shadow	Egress		26	0	43		I.	Eclipse	Disapp.		30	19	37	10.1
II.	Occult.	Reapp.		26	2	46		I.	Occult.	Reapp.		30	23	10	
IV.	Transit	Ingress		26	7	15									

Phases of the Eclipses of the Satellites for an Inverting Telescope.



WASHINGTON MEAN TIME.

MAY.

				d	h	m	s					d	h	m	s
II.	Shadow	Ingress		1	4	51		II.	Transit	Ingress		8	10	5	
II.	Transit	Ingress		1	7	24		II.	Shadow	Egress		8	10	22	
II.	Shadow	Egress		1	7	47		II.	Transit	Egress		8	12	59	
II.	Transit	Egress		1	10	19		I.	Shadow	Ingress		8	18	49	
I.	Shadow	Ingress		1	16	56		I.	Transit	Ingress		8	20	9	
I.	Transit	Ingress		1	18	12		I.	Shadow	Egress		8	21	10	
I.	Shadow	Egress		1	19	16		I.	Transit	Egress		8	22	29	
I.	Transit	Egress		1	20	32		III.	Eclipse	Disapp.		9	4	25	0.0
III.	Eclipse	Disapp.		2	0	25	10.6	III.	Eclipse	Reapp.		9	7	58	3.0
III.	Eclipse	Reapp.		2	3	58	19.2	III.	Occult.	Disapp.		9	9	42	
III.	Occult.	Disapp.		2	5	30		III.	Occult.	Reapp.		9	13	22	
III.	Occult.	Reapp.		2	9	11		I.	Eclipse	Disapp.	W.	9	15	59	23.7
I.	Eclipse	Disapp.		2	14	5	37.8	I.	Occult.	Reapp.		9	19	36	
I.	Occult.	Reapp.		2	17	40		II.	Eclipse	Disapp.		10	2	36	8.4
II.	Eclipse	Disapp.		3	0	0	33.1	II.	Occult.	Reapp.		10	8	9	
II.	Occult.	Reapp.		3	5	28		I.	Shadow	Ingress		10	13	18	
I.	Shadow	Ingress		3	11	24		I.	Transit	Ingress		10	14	38	
I.	Transit	Ingress		3	12	41		I.	Shadow	Egress	W.	10	15	38	
I.	Shadow	Egress		3	13	44		I.	Transit	Egress		10	16	58	
I.	Transit	Egress	W.	3	15	1		I.	Eclipse	Disapp.		11	10	27	47.8
IV.	Eclipse	Disapp.		4	3	25	49.9	I.	Occult.	Reapp.		11	14	5	
IV.	Eclipse	Reapp.		4	8	8	42.5	II.	Shadow	Ingress		11	20	44	
I.	Eclipse	Disapp.		4	8	34	1.7	II.	Transit	Ingress		11	23	25	
I.	Occult.	Reapp.		4	12	9		II.	Shadow	Egress		11	23	39	
IV.	Occult.	Disapp.	W.	4	15	27		II.	Transit	Egress		12	2	19	
II.	Shadow	Ingress		4	18	8		I.	Shadow	Ingress		12	7	46	
IV.	Occult.	Reapp.		4	20	21		I.	Transit	Ingress		12	9	7	
II.	Transit	Ingress		4	20	45		I.	Shadow	Egress		12	10	7	
II.	Shadow	Egress		4	21	4		I.	Transit	Egress		12	11	27	
II.	Transit	Egress		4	23	39		IV.	Shadow	Ingress		12	13	57	
I.	Shadow	Ingress		5	5	52		III.	Shadow	Ingress		12	18	34	
I.	Transit	Ingress		5	7	11		IV.	Shadow	Egress		12	18	52	
I.	Shadow	Egress		5	8	13		III.	Shadow	Egress		12	22	17	
I.	Transit	Egress		5	9	30		III.	Transit	Ingress		13	0	0	
III.	Shadow	Ingress		5	14	34		IV.	Transit	Ingress		13	2	30	
III.	Shadow	Egress		5	18	17		III.	Transit	Egress		13	3	40	
III.	Transit	Ingress		5	19	50		I.	Eclipse	Disapp.		13	4	56	17.8
III.	Transit	Egress		5	23	32		IV.	Transit	Egress		13	7	16	
I.	Eclipse	Disapp.		6	3	2	31.3	I.	Occult.	Reapp.		13	8	34	
I.	Occult.	Reapp.		6	6	38		II.	Eclipse	Disapp.	W.	13	15	54	2.5
II.	Eclipse	Disapp.		6	13	18	34.5	II.	Occult.	Reapp.		13	21	28	
II.	Occult.	Reapp.		6	18	49		I.	Shadow	Ingress		14	2	15	
I.	Shadow	Ingress		7	0	21		I.	Transit	Ingress		14	3	36	
I.	Transit	Ingress		7	1	40		I.	Shadow	Egress		14	4	35	
I.	Shadow	Egress		7	2	41		I.	Transit	Egress		14	5	56	
I.	Transit	Egress		7	4	0		I.	Eclipse	Disapp.		14	23	24	42.7
I.	Eclipse	Disapp.		7	21	30	55.9	I.	Occult.	Reapp.		15	2	3	
I.	Occult.	Reapp.		8	1	7		II.	Shadow	Ingress		15	10	2	
II.	Shadow	Ingress		8	7	26		II.	Transit	Ingress		15	12	45	

WASHINGTON MEAN TIME.

MAY.

				d	h	m	s					d	h	m	s
II.	Shadow	Egress		15	12	57		II.	Transit	Egress		22	18	15	
II.	Transit	Egress	W.	15	15	38		I.	Shadow	Ingress		22	22	37	
I.	Shadow	Ingress		15	20	43		I.	Transit	Ingress		23	0	0	
I.	Transit	Ingress		15	22	5		I.	Shadow	Egress		23	0	57	
I.	Shadow	Egress		15	23	4		I.	Transit	Egress		23	2	19	
I.	Transit	Egress		16	0	24		III.	Eclipse	Disapp.		23	12	25	22.2
III.	Eclipse	Disapp.		16	8	25	27.6	III.	Eclipse	Reapp.	W.	23	15	58	10.6
III.	Eclipse	Reapp.		16	11	58	24.0	III.	Occult.	Disapp.		23	17	55	
III.	Occult.	Disapp.		16	13	50		I.	Eclipse	Disapp.		23	19	47	0.3
III.	Occult.	Reapp.		16	17	30		III.	Occult.	Reapp.		23	21	34	
I.	Eclipse	Disapp.		16	17	53	11.2	I.	Occult.	Reapp.		23	23	27	
I.	Occult.	Reapp.		16	21	32		II.	Eclipse	Disapp.		24	7	46	49.3
II.	Eclipse	Disapp.		17	5	11	33.5	II.	Occult.	Reapp.		24	13	24	
II.	Occult.	Reapp.		17	10	47		I.	Shadow	Ingress		24	17	6	
I.	Shadow	Ingress	W.	17	15	12		I.	Transit	Ingress		24	18	28	
I.	Transit	Ingress		17	16	34		I.	Shadow	Egress		24	19	26	
I.	Shadow	Egress		17	17	32		I.	Transit	Egress		24	20	47	
I.	Transit	Egress		17	18	53		I.	Eclipse	Disapp.	W.	25	14	15	24.7
I.	Eclipse	Disapp.		18	12	21	35.3	I.	Occult.	Reapp.		25	17	55	
I.	Occult.	Reapp.		18	16	1		II.	Shadow	Ingress		26	1	55	
II.	Shadow	Ingress		18	23	19		II.	Transit	Ingress		26	4	40	
II.	Transit	Ingress		19	2	4		II.	Shadow	Egress		26	4	50	
II.	Shadow	Egress		19	2	14		II.	Transit	Egress		26	7	33	
II.	Transit	Egress		19	4	57		I.	Shadow	Ingress		26	11	34	
I.	Shadow	Ingress		19	9	40		I.	Transit	Ingress		26	12	56	
I.	Transit	Ingress		19	11	3		I.	Shadow	Egress	W.	26	13	54	
I.	Shadow	Egress		19	12	1		I.	Transit	Egress	W.	26	14	16	
I.	Transit	Egress		19	12	21		III.	Shadow	Ingress		27	2	34	
III.	Shadow	Ingress		19	22	34		III.	Shadow	Egress		27	6	16	
III.	Shadow	Egress		20	2	17		III.	Transit	Ingress		27	8	8	
III.	Transit	Ingress		20	4	6		I.	Eclipse	Disapp.		27	8	43	55.8
I.	Eclipse	Disapp.		20	6	50	6.0	III.	Transit	Egress		27	11	47	
III.	Transit	Egress		20	7	46		I.	Occult.	Reapp.		27	12	24	
I.	Occult.	Reapp.		20	10	30		II.	Eclipse	Disapp.		27	21	4	30.4
II.	Eclipse	Disapp.		20	18	29	21.2	II.	Occult.	Reapp.		28	2	41	
IV.	Eclipse	Disapp.		20	21	34	42.1	I.	Shadow	Ingress		28	6	3	
II.	Occult.	Reapp.		21	0	6		I.	Transit	Ingress		28	7	25	
IV.	Eclipse	Reapp.		21	2	16	26.7	I.	Shadow	Egress		28	8	23	
I.	Shadow	Ingress		21	4	9		I.	Transit	Egress		28	9	44	
I.	Transit	Ingress		21	5	31		I.	Eclipse	Disapp.		29	3	12	21.4
I.	Shadow	Egress		21	6	29		I.	Occult.	Reapp.		29	6	52	
I.	Transit	Egress		21	7	50		IV.	Shadow	Ingress		29	8	8	
IV.	Occult.	Disapp.		21	10	21		IV.	Shadow	Egress		29	13	2	
IV.	Occult.	Reapp.	W.	21	15	10		II.	Shadow	Ingress	W.	29	15	13	
I.	Eclipse	Disapp.		22	1	18	31.2	II.	Transit	Ingress		29	17	58	
I.	Occult.	Reapp.		22	4	58		II.	Shadow	Egress		29	18	8	
II.	Shadow	Ingress		22	12	37		II.	Transit	Egress		29	20	51	
II.	Transit	Ingress	W.	22	15	22		IV.	Transit	Ingress		29	21	2	
II.	Shadow	Egress	W.	22	15	32		I.	Shadow	Ingress		30	0	31	

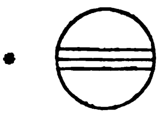
WASHINGTON MEAN TIME.

MAY.

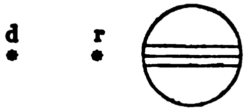
				d	h	m	s					d	h	m	s
IV.	Transit	Egress		30	1	42		I.	Occult.	Reapp.		31	1	21	
I.	Transit	Ingress		30	1	53		III.	Occult.	Reapp.		31	1	34	
I.	Shadow	Egress		30	2	51		II.	Eclipse	Disapp.		31	10	21	56.0
I.	Transit	Egress		30	4	13		II.	Occult.	Reapp.	W.	31	15	58	
III.	Eclipse	Disapp.		30	16	25	23.1	I.	Shadow	Ingress		31	18	59	
III.	Eclipse	Reapp.		30	19	58	2.5	I.	Transit	Ingress		31	20	21	
I.	Eclipse	Disapp.		30	21	40	51.0	I.	Shadow	Egress		31	21	19	
III.	Occult.	Disapp.		30	21	55		I.	Transit	Egress		31	22	41	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

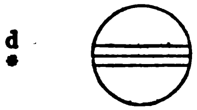
I.



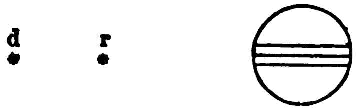
III.



II.



IV.



JUNE.

				d	h	m	s					d	h	m	s
I.	Eclipse	Disapp.		1	16	9	15.7	I.	Transit	Egress		4	11	38	
I.	Occult.	Reapp.		1	19	49		I.	Eclipse	Disapp.		5	5	6	13.8
II.	Shadow	Ingress		2	4	31		I.	Occult.	Reapp.		5	8	45	
II.	Transit	Ingress		2	7	15		II.	Shadow	Ingress		5	17	49	
II.	Shadow	Egress		2	7	26		II.	Transit	Ingress		5	20	32	
II.	Transit	Egress		2	10	8		II.	Shadow	Egress		5	20	44	
I.	Shadow	Ingress	W.	2	13	28		II.	Transit	Egress		5	23	24	
I.	Transit	Ingress	W.	2	14	50		I.	Shadow	Ingress		6	2	25	
I.	Shadow	Egress	W.	2	15	48		I.	Transit	Ingress		6	3	46	
I.	Transit	Egress		2	16	10		I.	Shadow	Egress		6	4	45	
III.	Shadow	Ingress		3	6	34		I.	Transit	Egress		6	6	6	
III.	Shadow	Egress		3	10	16		IV.	Eclipse	Disapp.	W.	6	15	43	5.0
I.	Eclipse	Disapp.		3	10	37	47.4	IV.	Eclipse	Reapp.		6	20	24	19.4
III.	Transit	Ingress		3	12	7		III.	Eclipse	Disapp.		6	20	25	2.0
I.	Occult.	Reapp.	W.	3	14	17		I.	Eclipse	Disapp.		6	23	34	44.2
III.	Transit	Egress	W.	3	15	45		III.	Eclipse	Reapp.		6	23	57	31.0
II.	Eclipse	Disapp.		3	23	30	31.6	III.	Occult.	Disapp.		7	1	51	
II.	Occult.	Reapp.		4	5	14		I.	Occult.	Reapp.		7	3	14	
I.	Shadow	Ingress		4	7	56		IV.	Occult.	Disapp.		7	4	26	
I.	Transit	Ingress		4	9	18		III.	Occult.	Reapp.		7	5	29	
I.	Shadow	Egress		4	10	16		IV.	Occult.	Reapp.		7	9	11	

WASHINGTON MEAN TIME.

JUNE.

				d	h	m	s					d	h	m	s
II.	Eclipse	Disapp.	W.	7	12	56	55.2	IV.	Shadow	Ingress		15	2	19	
II.	Occult.	Reapp.		7	18	30		I.	Transit	Egress		15	2	25	
I.	Shadow	Ingress		7	20	53		IV.	Shadow	Egress		15	7	11	
I.	Transit	Ingress		7	22	14		IV.	Transit	Ingress	W.	15	14	42	
I.	Shadow	Egress		7	23	13		IV.	Transit	Egress		15	19	15	
I.	Transit	Egress		8	0	34		I.	Eclipse	Disapp.		15	19	57	6.7
I.	Eclipse	Disapp.		8	18	3	9.6	I.	Occult.	Reapp.		15	23	34	
I.	Occult.	Reapp.		8	21	43		II.	Shadow	Ingress		16	9	43	
II.	Shadow	Ingress		9	7	7		II.	Transit	Ingress	W.	16	12	20	
II.	Transit	Ingress		9	9	49		II.	Shadow	Egress	W.	16	12	38	
II.	Shadow	Egress		9	10	2		II.	Transit	Egress	W.	16	15	12	
II.	Transit	Egress	W.	9	12	41		I.	Shadow	Ingress		16	17	15	
I.	Shadow	Ingress	W.	9	15	22		I.	Transit	Ingress		16	18	34	
I.	Transit	Ingress		9	16	42		I.	Shadow	Egress		16	19	35	
I.	Shadow	Egress		9	17	41		I.	Transit	Egress		16	20	53	
I.	Transit	Egress		9	18	2		I.	Eclipse	Disapp.	W.	17	14	25	40.2
III.	Shadow	Ingress		10	10	34		III.	Shadow	Ingress	W.	17	14	34	
I.	Eclipse	Disapp.		10	12	31	42.0	I.	Occult.	Reapp.		17	18	1	
III.	Shadow	Egress	W.	10	14	16		III.	Shadow	Egress		17	18	16	
III.	Transit	Ingress		10	16	2		III.	Transit	Ingress		17	19	51	
I.	Occult.	Reapp.		10	16	10		III.	Transit	Egress		17	23	28	
III.	Transit	Egress		10	19	39		II.	Eclipse	Disapp.		18	4	49	13.9
II.	Eclipse	Disapp.		11	2	14	25.7	II.	Occult.	Reapp.		18	10	15	
II.	Occult.	Reapp.		11	7	45		I.	Shadow	Ingress		18	11	44	
I.	Shadow	Ingress		11	9	50		I.	Transit	Ingress	W.	18	13	1	
I.	Transit	Ingress		11	11	10		I.	Shadow	Egress	W.	18	14	3	
I.	Shadow	Egress		11	12	10		I.	Transit	Egress	W.	18	15	20	
I.	Transit	Egress		11	13	30		I.	Eclipse	Disapp.		19	8	54	8.1
I.	Eclipse	Disapp.		12	7	0	9.1	I.	Occult.	Reapp.	W.	19	12	29	
I.	Occult.	Reapp.		12	10	38		II.	Shadow	Ingress		19	23	1	
II.	Shadow	Ingress		12	20	25		II.	Transit	Ingress		20	1	35	
II.	Transit	Ingress		12	23	5		II.	Shadow	Egress		20	1	56	
II.	Shadow	Egress		12	23	20		II.	Transit	Egress		20	4	26	
II.	Transit	Egress		13	1	57		I.	Shadow	Ingress		20	6	12	
I.	Shadow	Ingress		13	4	19		I.	Transit	Ingress		20	7	29	
I.	Transit	Ingress		13	5	38		I.	Shadow	Egress		20	8	32	
I.	Shadow	Egress		13	6	38		I.	Transit	Egress		20	9	48	
I.	Transit	Egress		13	7	57		I.	Eclipse	Disapp.		21	3	22	40.8
III.	Eclipse	Disapp.		14	0	24	43.3	III.	Eclipse	Disapp.		21	4	24	49.7
I.	Eclipse	Disapp.		14	1	28	40.5	I.	Occult.	Reapp.		21	6	57	
III.	Eclipse	Reapp.		14	3	57	0.9	III.	Eclipse	Reapp.		21	7	56	54.5
I.	Occult.	Reapp.		14	5	6		III.	Occult.	Disapp.		21	9	32	
III.	Occult.	Disapp.		14	5	43		III.	Occult.	Reapp.	W.	21	13	9	
III.	Occult.	Reapp.		14	9	20		II.	Eclipse	Disapp.		21	18	6	34.1
II.	Eclipse	Disapp.	W.	14	15	31	47.7	II.	Occult.	Reapp.		21	23	27	
II.	Occult.	Reapp.		14	21	0		I.	Shadow	Ingress		22	0	40	
I.	Shadow	Ingress		14	22	47		I.	Transit	Ingress		22	1	56	
I.	Transit	Ingress		15	0	6		I.	Shadow	Egress		22	3	0	
I.	Shadow	Egress		15	1	7		I.	Transit	Egress		22	4	15	

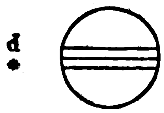
WASHINGTON MEAN TIME.

JUNE.

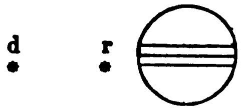
				d	h	m	s
I.	Eclipse	Disapp.		22	21	51	7.7
I.	Occult.	Reapp.		23	1	24	
IV.	Eclipse	Disapp.		23	9	56	2.0
II.	Shadow	Ingress	W.	23	12	19	
IV.	Eclipse	Reapp.	W.	23	14	32	24.2
II.	Transit	Ingress	W.	23	14	49	
II.	Shadow	Egress	W.	23	15	14	
II.	Transit	Egress		23	17	41	
I.	Shadow	Ingress		23	19	9	
I.	Transit	Ingress		23	20	24	
I.	Shadow	Egress		23	21	29	
IV.	Occult.	Disapp.		23	21	37	
I.	Transit	Egress		23	22	43	
IV.	Occult.	Reapp.		24	2	16	
I.	Eclipse	Disapp.		24	16	19	42.2
III.	Shadow	Ingress		24	18	34	
I.	Occult.	Reapp.		24	19	52	
III.	Shadow	Egress		24	22	16	
III.	Transit	Ingress		24	23	36	
III.	Transit	Egress		25	3	13	
II.	Eclipse	Disapp.		25	7	23	57.3
II.	Occult.	Reapp.	W.	25	12	40	
I.	Shadow	Ingress	W.	25	13	37	
I.	Transit	Ingress	W.	25	14	51	
I.	Shadow	Egress		25	15	57	
I.	Transit	Egress		25	17	10	
I.	Eclipse	Disapp.		26	10	48	11.2
I.	Occult.	Reapp.	W.	26	14	19	
II.	Shadow	Ingress		27	1	37	
II.	Transit	Ingress		27	4	3	
II.	Shadow	Egress		27	4	32	
II.	Transit	Egress		27	6	55	
I.	Shadow	Ingress		27	8	5	
I.	Transit	Ingress		27	9	18	
I.	Shadow	Egress		27	10	25	
I.	Transit	Egress	W.	27	11	37	
I.	Eclipse	Disapp.		28	5	16	45.2
III.	Eclipse	Disapp.		28	8	25	1.0
I.	Occult.	Reapp.		28	8	46	
III.	Eclipse	Reapp.	W.	28	11	56	51.8
III.	Occult.	Disapp.	W.	28	13	14	
III.	Occult.	Reapp.		28	16	50	
II.	Eclipse	Disapp.		28	20	41	17.6
II.	Occult.	Reapp.		29	1	52	
I.	Shadow	Ingress		29	2	34	
I.	Transit	Ingress		29	3	46	
I.	Shadow	Egress		29	4	54	
I.	Transit	Egress		29	6	4	
I.	Eclipse	Disapp.		29	23	45	13.1
I.	Occult.	Reapp.		30	3	14	
II.	Shadow	Ingress	W.	30	14	55	
II.	Transit	Ingress		30	17	16	
II.	Shadow	Egress		30	17	50	
II.	Transit	Egress		30	20	8	
I.	Shadow	Ingress		30	21	2	
I.	Transit	Ingress		30	22	13	
I.	Shadow	Egress		30	23	22	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

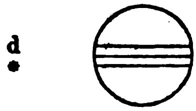
I.



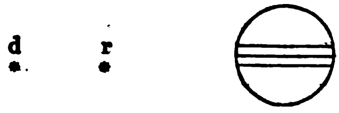
III.



II.



IV.



WASHINGTON MEAN TIME.

JULY.

				d	h	m	s					d	h	m	s
I.	Transit	Egress		1	0	32		I.	Eclipse	Disapp.		8	20	8	0.6
I.	Eclipse	Disapp.		1	18	13	48.8	I.	Occult.	Reapp.		8	23	29	
IV.	Shadow	Ingress		1	20	30		III.	Shadow	Ingress		9	2	33	
I.	Occult.	Reapp.		1	21	41		III.	Shadow	Egress		9	6	15	
III.	Shadow	Ingress		1	22	34		III.	Transit	Ingress		9	6	52	
IV.	Shadow	Egress		2	1	20		III.	Transit	Egress		9	10	27	
III.	Shadow	Egress		2	2	16		II.	Eclipse	Disapp.	W.	9	12	33	14.0
III.	Transit	Ingress		2	3	16		I.	Shadow	Ingress		9	17	24	
III.	Transit	Egress		2	6	53		II.	Occult.	Reapp.		9	17	26	
IV.	Transit	Ingress		2	7	24		I.	Transit	Ingress		9	18	27	
II.	Eclipse	Disapp.		2	9	58	36.8	I.	Shadow	Egress		9	19	44	
IV.	Transit	Egress	W.	2	11	52		I.	Transit	Egress		9	20	46	
II.	Occult.	Reapp.	W.	2	15	4		IV.	Eclipse	Disapp.		10	4	4	20.0
I.	Shadow	Ingress	W.	2	15	31		IV.	Eclipse	Reapp.		10	8	40	26.4
I.	Transit	Ingress		2	16	40		IV.	Occult.	Disapp.	W.	10	13	48	
I.	Shadow	Egress		2	17	51		I.	Eclipse	Disapp.	W.	10	14	36	32.4
I.	Transit	Egress		2	18	59		I.	Occult.	Reapp.		10	17	56	
I.	Eclipse	Disapp.	W	3	12	42	18.9	IV.	Occult.	Reapp.		10	18	22	
I.	Occult.	Reapp.		3	16	8		II.	Shadow	Ingress		11	6	51	
II.	Shadow	Ingress		4	4	14		II.	Transit	Ingress		11	8	54	
II.	Transit	Ingress		4	6	29		II.	Shadow	Egress		11	9	46	
II.	Shadow	Egress		4	7	9		II.	Transit	Egress	W.	11	11	45	
II.	Transit	Egress		4	9	20		I.	Shadow	Ingress	W.	11	11	53	
I.	Shadow	Ingress		4	9	59		I.	Transit	Ingress	W.	11	12	54	
I.	Transit	Ingress	W.	4	11	7		I.	Shadow	Egress	W.	11	14	13	
I.	Shadow	Egress	W.	4	12	19		I.	Transit	Egress	W.	11	15	13	
I.	Transit	Egress	W.	4	13	26		I.	Eclipse	Disapp.		12	9	5	9.2
I.	Eclipse	Disapp		5	7	10	54.3	I.	Occult.	Reapp.	W.	12	12	23	
I.	Occult.	Reapp.		5	10	35		III.	Eclipse	Disapp.		12	16	26	19.5
III.	Eclipse	Disapp.	W.	5	12	25	54.8	III.	Eclipse	Reapp.		12	19	57	38.9
III.	Eclipse	Reapp.		5	15	57	30.4	III.	Occult.	Disapp.		12	20	26	
III.	Occult.	Disapp.		5	16	53		III.	Occult.	Reapp.		13	0	2	
III.	Occult.	Reapp.		5	20	28		II.	Eclipse	Disapp.		13	1	50	32.7
II.	Eclipse	Disapp.		5	23	15	55.6	I.	Shadow	Ingress		13	6	21	
II.	Occult.	Reapp.		6	4	15		II.	Occult.	Reapp.		13	6	36	
I.	Shadow	Ingress		6	4	27		I.	Transit	Ingress		13	7	21	
I.	Transit	Ingress		6	5	34		I.	Shadow	Egress		13	8	41	
I.	Shadow	Egress		6	6	47		I.	Transit	Egress		13	9	40	
I.	Transit	Egress		6	7	53		I.	Eclipse	Disapp.		14	3	33	39.9
I.	Eclipse	Disapp.		7	1	39	23.4	I.	Occult.	Reapp.		14	6	50	
I.	Occult.	Reapp.		7	5	2		II.	Shadow	Ingress		14	20	9	
II.	Shadow	Ingress		7	17	32		II.	Transit	Ingress		14	22	5	
II.	Transit	Ingress		7	19	42		II.	Shadow	Egress		14	23	4	
II.	Shadow	Egress		7	20	27		I.	Shadow	Ingress		15	0	50	
II.	Transit	Egress		7	22	33		II.	Transit	Egress		15	0	56	
I.	Shadow	Ingress		7	22	56		I.	Transit	Ingress		15	1	48	
I.	Transit	Ingress		8	0	1		I.	Shadow	Egress		15	3	10	
I.	Shadow	Egress		8	1	16		I.	Transit	Egress		15	4	7	
I.	Transit	Egress		8	2	20		I.	Eclipse	Disapp.		15	22	2	18.6

WASHINGTON MEAN TIME.

JULY.

				d	h	m	s					d	h	m	s
I.	Occult.	Reapp.		16	1	16		III.	Shadow	Egress	W.	23	14	15	
III.	Shadow	Ingress		16	6	33		III.	Transit	Egress		23	17	24	
III.	Shadow	Egress	W.	16	10	15		II.	Eclipse	Disapp.		23	17	42	28.3
III.	Transit	Ingress	W.	16	10	23		I.	Shadow	Ingress		23	21	12	
III.	Transit	Egress	W.	16	13	58		I.	Transit	Ingress		23	22	0	
II.	Eclipse	Disapp.	W.	16	15	7	50.7	II.	Occult.	Reapp.		23	22	3	
I.	Shadow	Ingress		16	19	18		I.	Shadow	Egress		23	23	32	
II.	Occult.	Reapp.		16	19	45		I.	Transit	Egress		24	0	19	
I.	Transit	Ingress		16	20	14		I.	Eclipse	Disapp.		24	18	25	18.1
I.	Shadow	Egress		16	21	38		I.	Occult.	Reapp.		24	21	29	
I.	Transit	Egress		16	22	33		II.	Shadow	Ingress	W.	25	12	5	
I.	Eclipse	Disapp.		17	16	30	51.9	II.	Transit	Ingress	W.	25	13	36	
I.	Occult.	Reapp.		17	19	43		II.	Shadow	Egress	W.	25	15	0	
II.	Shadow	Ingress		18	9	28		I.	Shadow	Ingress	W.	25	15	41	
II.	Transit	Ingress	W.	18	11	16		I.	Transit	Ingress		25	16	27	
II.	Shadow	Egress	W.	18	12	23		II.	Transit	Egress		25	16	28	
I.	Shadow	Ingress	W.	18	13	47		I.	Shadow	Egress		25	18	1	
II.	Transit	Egress	W.	18	14	7		I.	Transit	Egress		25	18	45	
I.	Transit	Ingress	W.	18	14	41		I.	Eclipse	Disapp.	W.	26	12	53	58.7
IV.	Shadow	Ingress	W.	18	14	42		I.	Occult.	Reapp.	W.	26	15	46	
I.	Shadow	Egress		18	16	7		IV.	Eclipse	Disapp.		26	22	15	44.2
I.	Transit	Egress		18	17	0		III.	Eclipse	Disapp.		27	0	27	52.3
IV.	Shadow	Egress		18	19	30		IV.	Eclipse	Reapp.		27	2	49	11.6
IV.	Transit	Ingress		18	23	8		IV.	Occult.	Disapp.		27	5	4	
IV.	Transit	Egress		19	3	33		III.	Occult.	Reapp.		27	6	55	
I.	Eclipse	Disapp.	W.	19	10	59	30.7	II.	Eclipse	Disapp.		27	6	59	48.8
I.	Occult.	Reapp.	W.	19	14	10		IV.	Occult.	Reapp.	W.	27	9	32	
III.	Eclipse	Disapp.		19	20	26	54.0	I.	Shadow	Ingress	W.	27	10	9	
III.	Occult.	Reapp.		20	3	30		I.	Transit	Ingress	W.	27	10	53	
II.	Eclipse	Disapp.		20	4	25	10.0	II.	Occult.	Reapp.	W.	27	11	12	
I.	Shadow	Ingress		20	8	15		I.	Shadow	Egress	W.	27	12	20	
II.	Occult.	Reapp.		20	8	54		I.	Transit	Egress	W.	27	13	12	
I.	Transit	Ingress		20	9	7		I.	Eclipse	Disapp.		28	7	22	32.6
I.	Shadow	Egress	W.	20	10	35		I.	Occult.	Reapp.	W.	28	10	22	
I.	Transit	Egress	W.	20	11	26		II.	Shadow	Ingress		29	1	24	
I.	Eclipse	Disapp.		21	5	28	2.7	II.	Transit	Ingress		29	2	45	
I.	Occult.	Reapp.		21	8	26		II.	Shadow	Egress		29	4	19	
II.	Shadow	Ingress		21	22	46		I.	Shadow	Ingress		29	4	38	
II.	Transit	Ingress		22	0	26		I.	Transit	Ingress		29	5	19	
II.	Shadow	Egress		22	1	41		II.	Transit	Egress		29	5	37	
I.	Shadow	Ingress		22	2	44		I.	Shadow	Egress		29	6	58	
II.	Transit	Egress		22	3	18		I.	Transit	Egress		29	7	38	
I.	Transit	Ingress		22	3	34		I.	Eclipse	Disapp.		30	1	51	14.7
I.	Shadow	Egress		22	5	4		I.	Occult.	Reapp.		30	4	48	
I.	Transit	Egress		22	5	53		III.	Shadow	Ingress	W.	30	14	35	
I.	Eclipse	Disapp.		22	23	56	43.1	III.	Transit	Ingress	W.	30	17	13	
I.	Occult.	Reapp.		23	3	3		III.	Shadow	Egress		30	18	15	
III.	Shadow	Ingress	W.	23	10	34		II.	Eclipse	Disapp.		30	20	17	8.1
III.	Transit	Ingress	W.	23	13	50		III.	Transit	Egress		30	20	48	

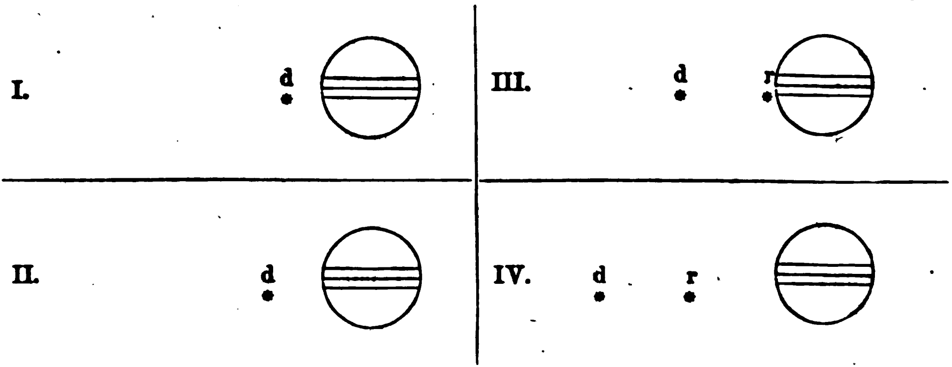
WASHINGTON MEAN TIME.

JULY.

			d	h	m	s
I.	Shadow	Ingress	30	23	6	
I.	Transit	Ingress	30	23	45	
II.	Occult.	Reapp.	31	0	22	
I.	Shadow	Egress	31	1	26	

			d	h	m	s
I.	Transit	Egress	31	2	4	
I.	Eclipse	Disapp.	31	20	19	51.6
I.	Occult.	Reapp.	31	23	14	

Phases of the Eclipses of the Satellites for an Inverting Telescope.



AUGUST.

				d	h	m	s
II.	Shadow	Ingress	W.	1	14	43	
II.	Transit	Ingress	W.	1	15	54	
I.	Shadow	Ingress		1	17	35	
II.	Shadow	Egress		1	17	38	
I.	Transit	Ingress		1	18	11	
II.	Transit	Egress		1	18	46	
I.	Shadow	Egress		1	19	55	
I.	Transit	Egress		1	20	30	
I.	Eclipse	Disapp.		2	14	48	34.1
I.	Occult.	Reapp.		2	17	41	
III.	Eclipse	Disapp.		3	4	27	38.5
II.	Eclipse	Disapp.	W.	3	9	34	30.2
III.	Occult.	Reapp.	W.	3	10	16	
I.	Shadow	Ingress	W.	3	12	3	
I.	Transit	Ingress	W.	3	12	37	
II.	Occult.	Reapp.	W.	3	13	30	
I.	Shadow	Egress	W.	3	14	23	
I.	Transit	Egress	W.	3	14	56	
IV.	Shadow	Ingress	W.	4	8	55	
I.	Eclipse	Disapp.	W.	4	9	17	9.8
I.	Occult.	Reapp.	W.	4	12	6	
IV.	Shadow	Egress	W.	4	13	40	
IV.	Transit	Ingress	W.	4	14	0	
IV.	Transit	Egress		4	18	25	
II.	Shadow	Ingress		5	4	2	

				d	h	m	s
II.	Transit	Ingress		5	5	3	
I.	Shadow	Ingress		5	6	32	
II.	Shadow	Egress		5	6	57	
I.	Transit	Ingress		5	7	3	
II.	Transit	Egress		5	7	55	
I.	Shadow	Egress	W.	5	8	52	
I.	Transit	Egress	W.	5	9	22	
I.	Eclipse	Disapp.		6	3	45	53.8
I.	Occult.	Reapp.		6	6	33	
III.	Shadow	Ingress		6	18	35	
III.	Transit	Ingress		6	20	33	
III.	Shadow	Egress		6	22	15	
II.	Eclipse	Disapp.		6	22	51	51.6
III.	Transit	Egress		7	0	8	
I.	Shadow	Ingress		7	1	0	
I.	Transit	Ingress		7	1	29	
II.	Occult.	Reapp.		7	2	36	
I.	Shadow	Egress		7	3	20	
I.	Transit	Egress		7	4	48	
I.	Eclipse	Disapp.		7	22	14	32.5
I.	Occult.	Reapp.		8	0	59	
II.	Shadow	Ingress		8	17	21	
II.	Transit	Ingress		8	18	12	
I.	Shadow	Ingress		8	19	29	
I.	Transit	Ingress		8	19	55	

WASHINGTON MEAN TIME.

AUGUST.

				d	h	m	s
II.	Shadow	Egress		8	20	15	
II.	Transit	Egress		8	21	4	
I.	Shadow	Egress		8	21	49	
I.	Transit	Egress		8	22	14	
I.	Eclipse	Disapp.		9	16	43	16.9
I.	Occult.	Reapp.		9	19	25	
III.	Eclipse	Disapp.		10	8	28	35.5
II.	Eclipse	Disapp.	W.	10	12	9	15.8
III.	Occult.	Reapp.	W.	10	13	35	
I.	Shadow	Ingress	W.	10	13	57	
I.	Transit	Ingress	W.	10	14	21	
II.	Occult.	Reapp.	W.	10	15	44	
I.	Shadow	Egress	W.	10	16	17	
I.	Transit	Egress		10	16	40	
I.	Eclipse	Disapp.	W.	11	11	11	54.4
I.	Occult.	Reapp.	W.	11	13	51	
II.	Shadow	Ingress		12	6	40	
II.	Transit	Ingress		12	7	21	
I.	Shadow	Ingress	W.	12	8	26	
I.	Transit	Ingress	W.	12	8	47	
II.	Shadow	Egress	W.	12	9	34	
II.	Transit	Egress	W.	12	10	13	
I.	Shadow	Egress	W.	12	10	46	
I.	Transit	Egress	W.	12	11	6	
IV.	Eclipse	Disapp.		12	16	28	6.3
IV.	Occult.	Reapp		13	0	0	
I.	Eclipse	Disapp.		13	5	40	40.3
I.	Occult.	Reapp.	W.	13	8	17	
III.	Shadow	Ingress		13	22	36	
III.	Transit	Ingress		13	23	50	
II.	Eclipse	Disapp.		14	1	26	40.2
III.	Shadow	Egress		14	2	15	
I.	Shadow	Ingress		14	2	54	
I.	Transit	Ingress		14	3	13	
III.	Transit	Egress		14	3	25	
II.	Occult.	Reapp.		14	4	50	
I.	Shadow	Egress		14	5	14	
I.	Transit	Egress		14	6	31	
I.	Eclipse	Disapp.		15	0	9	20.8
I.	Occult.	Reapp.		15	2	43	
II.	Shadow	Ingress		15	19	59	
II.	Transit	Ingress		15	20	29	
I.	Shadow	Ingress		15	21	23	
I.	Transit	Ingress		15	21	39	
II.	Shadow	Egress		15	22	53	
II.	Transit	Egress		15	23	21	
I.	Shadow	Egress		15	23	43	
I.	Transit	Egress		15	23	57	
I.	Eclipse	Disapp.		16	18	38	7.4
I.	Occult.	Reapp.		16	21	9	
III.	Eclipse	Disapp.	W.	17	12	29	39.7
II.	Eclipse	Disapp.	W.	17	14	44	6.8
I.	Shadow	Ingress	W.	17	15	51	
I.	Transit	Ingress	W.	17	16	4	
III.	Occult.	Reapp.		17	16	53	
II.	Occult.	Reapp.		17	17	57	
I.	Shadow	Egress		17	18	11	
I.	Transit	Egress		17	18	23	
I.	Eclipse	Disapp.	W.	18	13	6	46.6
I.	Occult.	Reapp.	W.	18	15	35	
II.	Shadow	Ingress	W.	19	9	18	
II.	Transit	Ingress	W.	19	9	37	
I.	Shadow	Ingress	W.	19	10	20	
I.	Transit	Ingress	W.	19	10	30	
II.	Shadow	Egress	W.	19	12	12	
II.	Transit	Egress	W.	19	12	29	
I.	Shadow	Egress	W.	19	12	40	
I.	Transit	Egress	W.	19	12	49	
I.	Eclipse	Disapp.		20	7	35	34.8
I.	Occult.	Reapp.	W.	20	10	1	
III.	Shadow	Ingress		21	2	36	
III.	Transit	Ingress		21	3	6	
IV.	Shadow	Ingress		21	3	9	
II.	Eclipse	Disapp.		21	4	1	34.3
IV.	Transit	Ingress		21	4	20	
I.	Shadow	Ingress		21	4	49	
I.	Transit	Ingress		21	4	56	
III.	Shadow	Egress		21	6	15	
III.	Transit	Egress		21	6	41	
II.	Occult.	Reapp.		21	7	4	
I.	Shadow	Egress		21	7	8	
I.	Transit	Egress		21	7	15	
IV.	Shadow	Egress	W.	21	7	51	
IV.	Transit	Egress	W.	21	8	46	
I.	Eclipse	Disapp.		22	2	4	16.8
I.	Occult.	Reapp.		22	4	27	
II.	Shadow	Ingress		22	22	36	
II.	Transit	Ingress		22	22	45	
I.	Shadow	Ingress		22	23	17	
I.	Transit	Ingress		22	23	21	
II.	Shadow	Egress		23	1	30	
II.	Transit	Egress		23	1	37	
I.	Shadow	Egress		23	1	37	
I.	Transit	Egress		23	1	41	
I.	Eclipse	Disapp.		23	20	38	5.4
I.	Occult.	Reapp.		23	22	53	
III.	Eclipse	Disapp.		24	16	31	39.3
II.	Occult.	Disapp.		24	17	19	

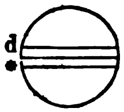
WASHINGTON MEAN TIME.

AUGUST.

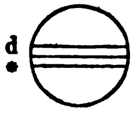
				d	h	m	s
I.	Shadow	Ingress		24	17	46	
I.	Transit	Ingress		24	17	47	
I.	Shadow	Egress		24	20	5	
I.	Transit	Egress		24	20	6	
III.	Occult.	Reapp.		24	20	9	
II.	Occult.	Reapp.		24	20	10	
I.	Occult.	Disapp.	W.	25	15	0	
I.	Occult.	Reapp.		25	17	19	
II.	Transit	Ingress	W.	26	11	54	
II.	Shadow	Ingress	W.	26	11	56	
I.	Transit	Ingress	W.	26	12	13	
I.	Shadow	Ingress	W.	26	12	14	
I.	Transit	Egress	W.	26	14	32	
I.	Shadow	Egress	W.	26	14	34	
II.	Transit	Egress	W.	26	14	46	
II.	Shadow	Egress	W.	26	14	49	
I.	Occult.	Disapp.	W.	27	9	25	
I.	Eclipse	Reapp.	W.	27	11	46	5.2
III.	Transit	Ingress		28	6	21	
II.	Occult.	Disapp.		28	6	26	
III.	Shadow	Ingress		28	6	37	
I.	Transit	Ingress		28	6	39	
I.	Shadow	Ingress		28	6	43	
I.	Transit	Egress	W.	28	8	58	
I.	Shadow	Egress	W.	28	9	3	
II.	Eclipse	Reapp.	W.	28	9	23	1.7
III.	Transit	Egress	W.	28	9	57	
III.	Shadow	Egress	W.	28	10	16	
I.	Occult.	Disapp.		29	3	51	
I.	Eclipse	Reapp.		29	6	14	48.8
IV.	Occult.	Disapp.	W.	29	9	45	
IV.	Eclipse	Reapp.	W.	29	15	8	9.0
II.	Transit	Ingress		30	1	1	
I.	Transit	Ingress		30	1	5	
I.	Shadow	Ingress		30	1	12	
II.	Shadow	Ingress		30	1	15	
I.	Transit	Egress		30	3	24	
I.	Shadow	Egress		30	3	31	
II.	Transit	Egress		30	3	53	
II.	Shadow	Egress		30	4	8	
I.	Occult.	Disapp.		30	22	17	
I.	Eclipse	Reapp.		31	0	43	38.8
I.	Transit	Ingress		31	19	31	
II.	Occult.	Disapp.		31	19	32	
I.	Shadow	Ingress		31	19	40	
III.	Occult.	Disapp.		31	19	49	
I.	Transit	Egress		31	21	50	
I.	Shadow	Egress		31	22	0	
II.	Eclipse	Reapp.		31	22	40	28.1

Phases of the Eclipses of the Satellites for an Inverting Telescope.

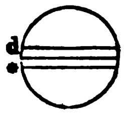
I.



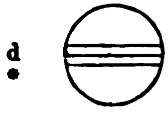
III.



II.



IV.



SEPTEMBER.

				d	h	m	s
III.	Eclipse	Reapp.		1	0	1	42.7
I.	Occult.	Disapp.		1	16	43	
I.	Eclipse	Reapp.		1	19	12	21.2
I.	Transit	Ingress	W.	2	13	56	
I.	Shadow	Ingress	W.	2	14	9	
II.	Transit	Ingress	W.	2	14	10	
II.	Shadow	Ingress	W.	2	14	34	
I.	Transit	Egress	W.	2	16	16	

WASHINGTON MEAN TIME.

SEPTEMBER.

				d	h	m	s					d	h	m	s
I.	Shadow	Egress		2	16	28		I.	Occult.	Disapp.	W.	10	12	54	
II.	Transit	Egress		2	17	2		I.	Eclipse	Reapp.	W.	10	15	36	25.1
II.	Shadow	Egress		2	17	28		I.	Transit	Ingress	W.	11	10	6	
I.	Occult.	Disapp.	W.	3	11	11		I.	Shadow	Ingress	W.	11	10	32	
I.	Eclipse	Reapp.	W.	3	13	41	11.9	II.	Occult.	Disapp.	W.	11	10	52	
I.	Transit	Ingress	W.	4	8	22		I.	Transit	Egress	W.	11	12	26	
I.	Shadow	Ingress	W.	4	8	38		I.	Shadow	Egress	W.	11	12	51	
II.	Occult.	Disapp.	W.	4	8	38		III.	Transit	Ingress	W.	11	12	54	
III.	Transit	Ingress	W.	4	9	37		II.	Eclipse	Reapp.	W.	11	14	32	2.8
III.	Shadow	Ingress	W.	4	10	38		III.	Shadow	Ingress	W.	11	14	39	
I.	Transit	Egress	W.	4	10	42		III.	Transit	Egress		11	16	30	
I.	Shadow	Egress	W.	4	10	57		III.	Shadow	Egress		11	18	18	
II.	Eclipse	Reapp.	W.	4	11	57	57.5	I.	Occult.	Disapp.	W.	12	7	21	
III.	Transit	Egress	W.	4	13	13		I.	Eclipse	Reapp.	W.	12	10	5	12.0
III.	Shadow	Egress	W.	4	14	17		I.	Transit	Ingress		13	4	32	
I.	Occult.	Disapp.		5	5	36		I.	Shadow	Ingress		13	5	1	
I.	Eclipse	Reapp.	W.	5	8	9	57.2	II.	Transit	Ingress		13	5	36	
I.	Transit	Ingress		6	2	48		II.	Shadow	Ingress		13	6	32	
I.	Shadow	Ingress		6	3	6		I.	Transit	Egress		13	6	52	
II.	Transit	Ingress		6	3	18		I.	Shadow	Egress	W.	13	7	20	
II.	Shadow	Ingress		6	3	54		II.	Transit	Egress	W.	13	8	28	
I.	Transit	Egress		6	5	8		II.	Shadow	Egress	W.	13	9	24	
I.	Shadow	Egress		6	5	25		I.	Occult.	Disapp.		14	1	47	
II.	Transit	Egress		6	6	10		I.	Eclipse	Reapp.		14	4	34	5.4
II.	Shadow	Egress		6	6	46		I.	Transit	Ingress		14	22	58	
IV.	Transit	Ingress		6	18	32		I.	Shadow	Ingress		14	23	30	
IV.	Shadow	Ingress		6	21	23		IV.	Occult.	Disapp.		15	0	0	
IV.	Transit	Egress		6	23	2		II.	Occult.	Disapp.		15	0	0	
I.	Occult.	Disapp.		7	0	2		I.	Transit	Egress		15	1	18	
IV.	Shadow	Egress		7	2	2		I.	Shadow	Egress		15	1	49	
I.	Eclipse	Reapp.		7	2	38	48.9	III.	Occult.	Disapp.		15	2	37	
I.	Transit	Ingress		7	21	14		II.	Eclipse	Reapp.		15	3	50	38.4
I.	Shadow	Ingress		7	21	35		IV.	Occult.	Reapp.		15	4	26	
II.	Occult.	Disapp.		7	21	45		IV.	Eclipse	Disapp.		15	4	55	41.3
III.	Occult.	Disapp.		7	23	6		III.	Eclipse	Reapp.	W.	15	8	3	39.2
I.	Transit	Egress		7	23	34		IV.	Eclipse	Reapp.	W.	15	9	18	47.7
I.	Shadow	Egress		7	23	54		I.	Occult.	Disapp.		15	20	13	
II.	Eclipse	Reapp.		8	1	15	28.3	I.	Eclipse	Reapp.		15	23	2	51.2
III.	Eclipse	Reapp.		8	4	2	48.5	I.	Transit	Ingress		16	17	24	
I.	Occult.	Disapp.		8	18	28		I.	Shadow	Ingress		16	17	58	
I.	Eclipse	Reapp.		8	21	7	32.8	II.	Transit	Ingress		16	18	45	
I.	Transit	Ingress		9	15	40		I.	Transit	Egress		16	19	44	
I.	Shadow	Ingress		9	16	3		II.	Shadow	Ingress		16	19	51	
II.	Transit	Ingress		9	16	27		I.	Shadow	Egress		16	20	17	
II.	Shadow	Ingress		9	17	13		II.	Transit	Egress		16	21	37	
I.	Transit	Egress		9	18	0		II.	Shadow	Egress		16	22	43	
I.	Shadow	Egress		9	18	22		I.	Occult.	Disapp.	W.	17	14	39	
II.	Transit	Egress		9	19	19		I.	Eclipse	Reapp.		17	17	31	44.6
II.	Shadow	Egress		9	20	5		I.	Transit	Ingress	W.	18	11	50	

WASHINGTON MEAN TIME.

SEPTEMBER.

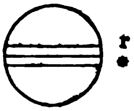
				d	h	m	s
I.	Shadow	Ingress	W.	18	12	27	
II.	Occult.	Disapp.	W.	18	13	8	
I.	Transit	Egress	W.	18	14	10	
I.	Shadow	Egress	W.	18	14	46	
III.	Transit	Ingress		18	16	15	
II.	Eclipse	Reapp.		18	17	8	18.4
III.	Shadow	Ingress		18	18	41	
III.	Transit	Egress		18	19	52	
III.	Shadow	Egress		18	22	19	
I.	Occult.	Disapp.	W.	19	9	6	
I.	Eclipse	Reapp.	W.	19	12	0	33.1
I.	Transit	Ingress		20	6	17	
I.	Shadow	Ingress	W.	20	6	56	
II.	Transit	Ingress	W.	20	7	54	
I.	Transit	Egress	W.	20	8	37	
II.	Shadow	Ingress	W.	20	9	10	
I.	Shadow	Egress	W.	20	9	15	
II.	Transit	Egress	W.	20	10	46	
II.	Shadow	Egress	W.	20	12	2	
I.	Occult.	Disapp.		21	3	32	
I.	Eclipse	Reapp.		21	6	29	27.8
I.	Transit	Ingress		22	0	43	
I.	Shadow	Ingress		22	1	25	
II.	Occult.	Disapp.		22	2	16	
I.	Transit	Egress		22	3	3	
I.	Shadow	Egress		22	3	44	
III.	Occult.	Disapp.		22	5	46	
II.	Eclipse	Reapp.		22	6	25	59.1
III.	Eclipse	Reapp.	W.	22	12	4	37.2
I.	Occult.	Disapp.		22	21	59	
I.	Eclipse	Reapp.		23	0	58	15.1
IV.	Transit	Ingress		23	9	5	
IV.	Transit	Egress	W.	23	13	39	
IV.	Shadow	Ingress		23	15	39	
I.	Transit	Ingress		23	19	10	
I.	Shadow	Ingress		23	19	53	
IV.	Shadow	Egress		23	20	14	
II.	Transit	Ingress		23	21	4	
I.	Transit	Egress		23	21	30	
I.	Shadow	Egress		23	22	12	
II.	Shadow	Ingress		23	22	29	
II.	Transit	Egress		23	23	56	
II.	Shadow	Egress		24	1	21	
I.	Occult.	Disapp.		24	16	25	
I.	Eclipse	Reapp.		24	19	27	9.8
I.	Transit	Ingress	W.	25	13	36	
I.	Shadow	Ingress	W.	25	14	22	
II.	Occult.	Disapp.		25	15	24	
I.	Transit	Egress		25	15	56	
I.	Shadow	Egress		25	16	41	
III.	Transit	Ingress		25	19	38	
II.	Eclipse	Reapp.		25	19	43	44.4
III.	Shadow	Ingress		25	22	42	
III.	Transit	Egress		25	23	15	
III.	Shadow	Egress		26	2	20	
I.	Occult.	Disapp.	W.	26	10	52	
I.	Eclipse	Reapp.	W.	26	13	55	59.8
I.	Transit	Ingress	W.	27	8	3	
I.	Shadow	Ingress	W.	27	8	50	
II.	Transit	Ingress	W.	27	10	15	
I.	Transit	Egress	W.	27	10	23	
I.	Shadow	Egress	W.	27	11	9	
II.	Shadow	Ingress	W.	27	11	48	
II.	Transit	Egress	W.	27	13	7	
II.	Shadow	Egress		27	14	40	
I.	Occult.	Disapp.		28	5	19	
I.	Eclipse	Reapp.	W.	28	8	24	55.8
I.	Transit	Ingress		29	2	30	
I.	Shadow	Ingress		29	3	19	
II.	Occult.	Disapp.		29	4	33	
I.	Transit	Egress		29	4	49	
I.	Shadow	Egress		29	5	38	
II.	Eclipse	Reapp.	W.	29	9	1	30.5
III.	Occult.	Disapp.	W.	29	9	11	
III.	Eclipse	Reapp.		29	16	6	4.9
I.	Occult.	Disapp.		29	23	46	
I.	Eclipse	Reapp.		30	2	53	44.5
I.	Transit	Ingress		30	20	56	
I.	Shadow	Ingress		30	21	48	
I.	Transit	Egress		30	23	15	
II.	Transit	Ingress		30	23	25	

WASHINGTON MEAN TIME.

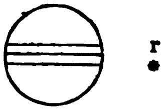
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

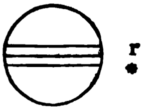
I.



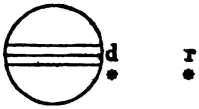
III.



II.



IV.



OCTOBER.

				d	h	m	s
I.	Shadow	Egress		1	0	7	
II.	Shadow	Ingress		1	1	7	
II.	Transit	Egress		1	2	18	
II.	Shadow	Egress		1	3	59	
IV.	Occult.	Disapp.		1	14	51	
I.	Occult.	Disapp.		1	18	12	
IV.	Occult.	Reapp.		1	19	18	
I.	Eclipse	Reapp.		1	21	22	40.5
IV.	Eclipse	Disapp.		1	23	11	11.1
IV.	Eclipse	Reapp.		2	3	30	0.9
I.	Transit	Ingress		2	15	23	
I.	Shadow	Ingress		2	16	17	
I.	Transit	Egress		2	17	42	
II.	Occult.	Disapp.		2	17	43	
I.	Shadow	Egress		2	18	36	
II.	Eclipse	Reapp.		2	22	19	21.5
III.	Transit	Ingress		2	23	5	
III.	Transit	Egress		3	2	43	
III.	Shadow	Ingress		3	2	44	
III.	Shadow	Egress		3	6	21	
I.	Occult.	Disapp.	W.	3	12	39	
I.	Eclipse	Reapp.		3	15	51	31.6
I.	Transit	Ingress	W.	4	9	50	
I.	Shadow	Ingress	W.	4	10	45	
I.	Transit	Egress	W.	4	12	9	
II.	Transit	Ingress	W.	4	12	36	
I.	Shadow	Egress	W.	4	13	4	
II.	Shadow	Ingress		4	14	27	
II.	Transit	Egress		4	15	29	
II.	Shadow	Egress		4	17	19	
I.	Occult.	Disapp.	W.	5	7	7	
I.	Eclipse	Reapp.	W.	5	10	20	28.9
I.	Transit	Ingress		6	4	17	
I.	Shadow	Ingress		6	5	14	
I.	Transit	Egress	W.	6	6	36	
II.	Occult.	Disapp.	W.	6	6	52	
I.	Shadow	Egress	W.	6	7	33	
II.	Eclipse	Reapp.	W.	6	11	37	13.4
III.	Occult.	Disapp.	W.	6	12	40	
III.	Occult.	Reapp.		6	16	19	
III.	Eclipse	Disapp.		6	16	41	6.7
III.	Eclipse	Reapp.		6	20	7	34.9
I.	Occult.	Disapp.		7	1	33	
I.	Eclipse	Reapp.		7	4	49	20.5
I.	Transit	Ingress		7	22	44	
I.	Shadow	Ingress		7	23	43	
I.	Transit	Egress		8	1	3	
II.	Transit	Ingress		8	1	48	
I.	Shadow	Egress		8	2	2	
II.	Shadow	Ingress		8	3	46	
II.	Transit	Egress		8	4	41	
II.	Shadow	Egress	W.	8	6	38	
I.	Occult.	Disapp.		8	20	1	
I.	Eclipse	Reapp.		8	23	18	15.5
I.	Transit	Ingress		9	17	11	
I.	Shadow	Ingress		9	18	12	
I.	Transit	Egress		9	19	30	
II.	Occult.	Disapp.		9	20	4	
I.	Shadow	Egress		9	20	31	
IV.	Transit	Ingress		10	0	21	

WASHINGTON MEAN TIME.

OCTOBER.

				d	h	m	s
II.	Eclipse	Reapp.		10	0	55	9.5
III.	Transit	Ingress		10	2	36	
IV.	Transit	Egress		10	5	0	
III.	Transit	Egress		10	6	14	
III.	Shadow	Ingress	W.	10	6	45	
IV.	Shadow	Ingress	W.	10	9	56	
III.	Shadow	Egress	W.	10	10	22	
IV.	Shadow	Egress		10	14	27	
I.	Occult.	Disapp.		10	14	28	
I.	Eclipse	Reapp.		10	17	47	7.4
I.	Transit	Ingress	W.	11	11	38	
I.	Shadow	Ingress	W.	11	12	41	
I.	Transit	Egress		11	13	57	
I.	Shadow	Egress		11	15	0	
II.	Transit	Ingress		11	15	1	
II.	Shadow	Ingress		11	17	5	
II.	Transit	Egress		11	17	54	
II.	Shadow	Egress		11	19	57	
I.	Occult.	Disapp.	W.	12	8	55	
I.	Eclipse	Reapp.	W.	12	12	16	5.7
I.	Transit	Ingress		13	6	6	
I.	Shadow	Ingress	W.	13	7	9	
I.	Transit	Egress	W.	13	8	25	
II.	Occult.	Disapp.	W.	13	9	16	
I.	Shadow	Egress	W.	13	9	28	
II.	Eclipse	Reapp.		13	14	13	7.2
III.	Occult.	Disapp.		13	16	15	
III.	Occult.	Reapp.		13	19	54	
III.	Eclipse	Disapp.		13	20	43	48.1
III.	Eclipse	Reapp.		14	0	9	44.1
I.	Occult.	Disapp.		14	3	22	
I.	Eclipse	Reapp.	W.	14	6	44	56.4
I.	Transit	Ingress		15	0	33	
I.	Shadow	Ingress		15	1	38	
I.	Transit	Egress		15	2	52	
I.	Shadow	Egress		15	3	57	
II.	Transit	Ingress		15	4	14	
II.	Shadow	Ingress	W.	15	6	24	
II.	Transit	Egress	W.	15	7	7	
II.	Shadow	Egress	W.	15	9	16	
I.	Occult.	Disapp.		15	21	50	
I.	Eclipse	Reapp.		16	1	13	53.8
I.	Transit	Ingress		16	19	0	
I.	Shadow	Ingress		16	20	7	
I.	Transit	Egress		16	21	19	
I.	Shadow	Egress		16	22	26	
II.	Occult.	Disapp.		16	22	28	
II.	Eclipse	Reapp.		17	3	31	12.1
III.	Transit	Ingress		17	6	12	
III.	Transit	Egress	W.	17	9	50	
III.	Shadow	Ingress	W.	17	10	47	
III.	Shadow	Egress		17	14	23	
I.	Occult.	Disapp.		17	16	18	
I.	Eclipse	Reapp.		17	19	42	46.6
IV.	Occult.	Disapp.	W.	18	6	33	
IV.	Occult.	Reapp.	W.	18	11	4	
I.	Transit	Ingress		18	13	28	
I.	Shadow	Ingress		18	14	36	
I.	Transit	Egress		18	15	47	
I.	Shadow	Egress		18	16	55	
II.	Transit	Ingress		18	17	27	
IV.	Eclipse	Disapp.		18	17	27	21.7
II.	Shadow	Ingress		18	19	44	
II.	Transit	Egress		18	20	20	
IV.	Eclipse	Reapp.		18	21	41	27.3
II.	Shadow	Egress		18	22	36	
I.	Occult.	Disapp.	W.	19	10	45	
I.	Eclipse	Reapp.		19	14	11	45.5
I.	Transit	Ingress	W.	20	7	55	
I.	Shadow	Ingress	W.	20	9	4	
I.	Transit	Egress	W.	20	10	14	
I.	Shadow	Egress	W.	20	11	23	
II.	Occult.	Disapp.	W.	20	11	40	
II.	Eclipse	Reapp.		20	16	49	12.3
III.	Occult.	Disapp.		20	19	54	
III.	Occult.	Reapp.		20	23	33	
III.	Eclipse	Disapp.		21	0	45	57.2
III.	Eclipse	Reapp.		21	4	11	19.8
I.	Occult.	Disapp.		21	5	13	
I.	Eclipse	Reapp.	W.	21	8	40	37.0
I.	Transit	Ingress		22	2	23	
I.	Shadow	Ingress		22	3	33	
I.	Transit	Egress		22	4	42	
I.	Shadow	Egress		22	5	52	
II.	Transit	Ingress	W.	22	6	41	
II.	Shadow	Ingress	W.	22	9	3	
II.	Transit	Egress	W.	22	9	34	
II.	Shadow	Egress	W.	22	11	55	
I.	Occult.	Disapp.		22	23	41	
I.	Eclipse	Reapp.		23	3	9	35.0
I.	Transit	Ingress		23	20	50	
I.	Shadow	Ingress		23	22	2	
I.	Transit	Egress		23	23	9	
I.	Shadow	Egress		24	0	21	
II.	Occult.	Disapp.		24	0	52	
II.	Eclipse	Reapp.		24	6	7	18.0
III.	Transit	Ingress	W.	24	9	53	
III.	Transit	Egress		24	13	21	

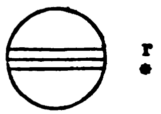
WASHINGTON MEAN TIME.

OCTOBER.

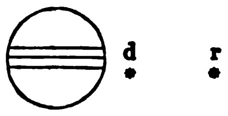
				d	h	m	s					d	h	m	s
III.	Shadow	Ingress		24	14	49		III.	Eclipse	Disapp.		28	4	48	9.8
I.	Occult.	Disapp.		24	18	8		I.	Occult.	Disapp.	W.	28	7	4	
III.	Shadow	Egress		24	18	24		III.	Eclipse	Reapp.	W.	28	8	12	58.0
I.	Eclipse	Reapp.		24	21	38	28.2	I.	Eclipse	Reapp.	W.	28	10	36	19.7
I.	Transit	Ingress		25	15	18		I.	Transit	Ingress		29	4	14	
I.	Shadow	Ingress		25	16	31		I.	Shadow	Ingress		29	5	29	
I.	Transit	Egress		25	17	37		I.	Transit	Egress	W.	29	6	33	
I.	Shadow	Egress		25	18	50		I.	Shadow	Egress	W.	29	7	48	
II.	Transit	Ingress		25	19	56		II.	Transit	Ingress	W.	29	9	11	
II.	Shadow	Ingress		25	22	22		II.	Shadow	Ingress	W.	29	11	41	
II.	Transit	Egress		25	22	49		II.	Transit	Egress	W.	29	12	4	
II.	Shadow	Egress		26	1	13		II.	Shadow	Egress		29	14	32	
I.	Occult.	Disapp.		26	12	36		I.	Occult.	Disapp.		30	1	32	
I.	Eclipse	Reapp.		26	16	7	27.6	I.	Eclipse	Reapp.		30	5	5	17.7
IV.	Transit	Ingress		26	16	36		I.	Transit	Ingress		30	22	42	
IV.	Transit	Egress		26	21	16		I.	Shadow	Ingress		30	23	58	
IV.	Shadow	Ingress		27	4	13		I.	Transit	Egress		31	1	1	
IV.	Shadow	Egress	W.	27	8	39		I.	Shadow	Egress		31	2	17	
I.	Transit	Ingress	W.	27	9	46		II.	Occult.	Disapp.		31	3	22	
I.	Shadow	Ingress	W.	27	11	0		II.	Eclipse	Reapp.	W.	31	8	43	38.9
I.	Transit	Egress	W.	27	12	5		III.	Transit	Ingress		31	13	39	
I.	Shadow	Egress		27	13	19		III.	Transit	Egress		31	17	18	
II.	Occult.	Disapp.		27	14	7		III.	Shadow	Ingress		31	18	51	
II.	Eclipse	Reapp.		27	19	25	28.1	I.	Occult.	Disapp.		31	20	0	
III.	Occult.	Disapp.		27	23	38		III.	Shadow	Egress		31	22	26	
III.	Occult.	Reapp.		28	3	17		I.	Eclipse	Reapp.		31	23	34	11.4

Phases of the Eclipses of the Satellites for an Inverting Telescope.

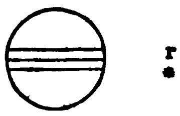
I.



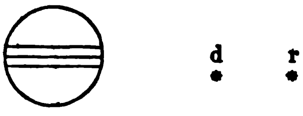
III.



II.



IV.



NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	1	17	10		I.	Shadow	Egress	1	20	46	
I.	Shadow	Ingress	1	18	27		II.	Transit	Ingress	1	22	27	
I.	Transit	Egress	1	19	29		II.	Shadow	Ingress	2	1	1	

WASHINGTON MEAN TIME.

NOVEMBER.

				d	h	m	s
II.	Transit	Egress		2	1	20	
II.	Shadow	Egress		2	3	52	
I.	Occult.	Disapp.		2	14	29	
I.	Eclipse	Reapp.		2	18	3	10.8
I.	Transit	Ingress	W.	3	11	38	
I.	Shadow	Ingress		3	12	56	
I.	Transit	Egress		3	13	57	
I.	Shadow	Egress		3	15	15	
II.	Occult.	Disapp.		3	16	38	
II.	Eclipse	Reapp.		3	22	1	55.4
IV.	Occult.	Disapp.		3	23	16	
III.	Occult.	Disapp.		4	3	27	
IV.	Occult.	Reapp.		4	3	52	
III.	Occult.	Reapp.	W.	4	7	6	
III.	Eclipse	Disapp.	W.	4	8	50	4.7
I.	Occult.	Disapp.	W.	4	8	57	
IV.	Eclipse	Disapp.	W.	4	11	44	34.1
III.	Eclipse	Reapp.		4	12	14	17.3
I.	Eclipse	Reapp.		4	12	32	3.2
IV.	Eclipse	Reapp.		4	15	53	31.5
I.	Transit	Ingress	W.	5	6	6	
I.	Shadow	Ingress	W.	5	7	25	
I.	Transit	Egress	W.	5	8	25	
I.	Shadow	Egress	W.	5	9	44	
II.	Transit	Ingress	W.	5	11	44	
II.	Shadow	Ingress		5	14	20	
II.	Transit	Egress		5	14	37	
II.	Shadow	Egress		5	17	11	
I.	Occult.	Disapp.		6	3	25	
I.	Eclipse	Reapp.	W.	6	7	1	1.3
I.	Transit	Ingress		7	0	35	
I.	Shadow	Ingress		7	1	54	
I.	Transit	Egress		7	2	54	
I.	Shadow	Egress		7	4	13	
II.	Occult.	Disapp.		7	5	54	
II.	Eclipse	Reapp.	W.	7	11	20	9.8
III.	Transit	Ingress		7	17	31	
III.	Transit	Egress		7	21	10	
I.	Occult.	Disapp.		7	21	54	
III.	Shadow	Ingress		7	22	53	
I.	Eclipse	Reapp.		8	1	29	55.1
III.	Shadow	Egress		8	2	27	
I.	Transit	Ingress		8	19	3	
I.	Shadow	Ingress		8	20	23	
I.	Transit	Egress		8	21	22	
I.	Shadow	Egress		8	22	42	
II.	Transit	Ingress		9	1	1	
II.	Shadow	Ingress		9	3	39	
II.	Transit	Egress		9	3	54	
II.	Shadow	Egress	W.	9	6	30	
I.	Occult.	Disapp.		9	16	22	
I.	Eclipse	Reapp.		9	19	58	54.3
I.	Transit	Ingress		10	13	32	
I.	Shadow	Ingress		10	14	52	
I.	Transit	Egress		10	15	51	
I.	Shadow	Egress		10	17	11	
II.	Occult.	Disapp.		10	19	10	
II.	Eclipse	Reapp.		11	0	38	32.7
III.	Occult.	Disapp.	W.	11	7	29	
I.	Occult.	Disapp.	W.	11	10	51	
III.	Occult.	Reapp.	W.	11	11	0	
III.	Eclipse	Disapp.		11	12	52	3.2
I.	Eclipse	Reapp.		11	14	27	46.8
III.	Eclipse	Reapp.		11	16	15	39.2
I.	Transit	Ingress	W.	12	8	0	
I.	Shadow	Ingress	W.	12	9	20	
IV.	Transit	Ingress	W.	12	9	52	
I.	Transit	Egress	W.	12	10	19	
I.	Shadow	Egress		12	11	39	
II.	Transit	Ingress		12	14	18	
IV.	Transit	Egress		12	14	34	
II.	Shadow	Ingress		12	16	58	
II.	Transit	Egress		12	17	11	
II.	Shadow	Egress		12	19	49	
IV.	Shadow	Ingress		12	22	31	
IV.	Shadow	Egress		13	2	52	
I.	Occult.	Disapp.		13	5	19	
I.	Eclipse	Reapp.	W.	13	8	56	44.7
I.	Transit	Ingress		14	2	29	
I.	Shadow	Ingress		14	3	49	
I.	Transit	Egress		14	4	48	
I.	Shadow	Egress	W.	14	6	8	
II.	Occult.	Disapp.	W.	14	8	27	
II.	Eclipse	Reapp.		14	13	56	50.9
III.	Transit	Ingress		14	21	27	
I.	Occult.	Disapp.		14	23	48	
III.	Transit	Egress		15	1	7	
III.	Shadow	Ingress		15	2	55	
I.	Eclipse	Reapp.		15	3	25	38.4
III.	Shadow	Egress	W.	15	6	29	
I.	Transit	Ingress		15	20	57	
I.	Shadow	Ingress		15	22	18	
I.	Transit	Egress		15	23	16	
I.	Shadow	Egress		16	0	37	
II.	Transit	Ingress		16	3	36	
II.	Shadow	Ingress	W.	16	6	18	
II.	Transit	Egress	W.	16	6	29	
II.	Shadow	Egress	W.	16	9	8	

WASHINGTON MEAN TIME.

NOVEMBER.

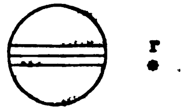
				d	h	m	s					d	h	m	s
I.	Occult.	Disapp.		16	18	17		I.	Eclipse	Reapp.		23	23	50	19.5
I.	Eclipse	Reapp.		16	21	54	37.6	I.	Transit	Ingress		24	17	21	
I.	Transit	Ingress		17	15	26		I.	Shadow	Ingress		24	18	42	
I.	Shadow	Ingress		17	16	47		I.	Transit	Egress		24	19	40	
I.	Transit	Egress		17	17	45		I.	Shadow	Egress		24	21	1	
I.	Shadow	Egress		17	19	6		II.	Occult.	Disapp.		25	0	22	
II.	Occult.	Disapp		17	21	45		II.	Eclipse	Reapp.	W.	25	5	52	17.0
II.	Eclipse	Reapp.		18	3	15	20.1	I.	Occult.	Disapp.		25	14	42	
III.	Occult.	Disapp.		18	11	19		III.	Occult.	Disapp.		25	15	22	
I.	Occult.	Disapp.		18	12	46		I.	Eclipse	Reapp.		25	18	19	11.6
III.	Occult.	Reapp.		18	14	58		III.	Occult.	Reapp.		25	19	1	
I.	Eclipse	Reapp.		18	16	23	29.9	III.	Eclipse	Disapp.		25	20	56	49.3
III.	Eclipse	Disapp.		18	16	54	28.4	III.	Eclipse	Reapp.		26	0	19	8.5
III.	Eclipse	Reapp.		18	20	17	26.4	I.	Transit	Ingress		26	11	50	
I.	Transit	Ingress	W.	19	9	54		I.	Shadow	Ingress		26	13	11	
I.	Shadow	Ingress		19	11	16		I.	Transit	Egress		26	14	9	
I.	Transit	Egress		19	12	13		I.	Shadow	Egress		26	15	30	
I.	Shadow	Egress		19	13	35		II.	Transit	Ingress		26	19	33	
II.	Transit	Ingress		19	16	55		II.	Shadow	Ingress		26	22	15	
II.	Shadow	Ingress		19	19	37		II.	Transit	Egress		26	22	26	
II.	Transit	Egress		19	19	48		II.	Shadow	Egress		27	1	5	
II.	Shadow	Egress		19	22	27		I.	Occult.	Disapp.	W.	27	9	11	
I.	Occult.	Disapp.	W.	20	7	15		I.	Eclipse	Reapp.		27	12	48	8.4
I.	Eclipse	Reapp.	W.	20	10	52	27.5	I.	Transit	Ingress	W.	28	6	20	
IV.	Occult.	Disapp.		20	17	2		I.	Shadow	Ingress	W.	28	7	40	
IV.	Occult.	Reapp.		20	21	41		I.	Transit	Egress	W.	28	8	39	
I.	Transit	Ingress		21	4	23		I.	Shadow	Egress	W.	28	9	59	
I.	Shadow	Ingress	W.	21	5	44		II.	Occult.	Disapp.		28	13	41	
IV.	Eclipse	Disapp.	W.	21	6	2	15.7	II.	Eclipse	Reapp.		28	19	10	40.9
I.	Transit	Egress	W.	21	6	42		I.	Occult.	Disapp.		29	3	40	
I.	Shadow	Egress	W.	21	8	3		IV.	Transit	Ingress		29	4	8	
IV.	Eclipse	Reapp.	W.	21	10	5	37.3	III.	Transit	Ingress		29	5	32	
II.	Occult.	Disapp.		21	11	3		I.	Eclipse	Reapp.	W.	29	7	17	1.0
II.	Eclipse	Reapp.		21	16	33	41.4	IV.	Transit	Egress	W.	29	8	49	
III.	Transit	Ingress		22	1	27		III.	Transit	Egress	W.	29	9	12	
I.	Occult.	Disapp.		22	1	44		III.	Shadow	Ingress		29	11	0	
III.	Transit	Egress		22	5	7		III.	Shadow	Egress		29	14	32	
I.	Eclipse	Reapp.		22	5	21	20.7	IV.	Shadow	Ingress		29	16	49	
III.	Shadow	Ingress	W.	22	6	57		IV.	Shadow	Egress		29	21	5	
III.	Shadow	Egress	W.	22	10	30		I.	Transit	Ingress		30	0	49	
I.	Transit	Ingress		22	22	52		I.	Shadow	Ingress		30	2	9	
I.	Shadow	Ingress		23	0	13		I.	Transit	Egress		30	3	8	
I.	Transit	Egress		23	1	11		I.	Shadow	Egress		30	4	28	
I.	Shadow	Egress		23	2	32		II.	Transit	Ingress	W.	30	8	53	
II.	Transit	Ingress	W.	23	6	14		II.	Shadow	Ingress		30	11	34	
II.	Shadow	Ingress	W.	23	8	56		II.	Transit	Egress		30	11	46	
II.	Transit	Egress	W.	23	9	7		II.	Shadow	Egress		30	14	24	
II.	Shadow	Egress		23	11	46		I.	Occult.	Disapp.		30	22	10	
I.	Occult.	Disapp.		23	20	13									

WASHINGTON MEAN TIME.

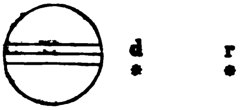
NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

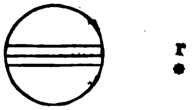
I.



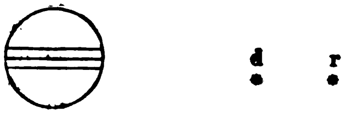
III.



II.



IV.



DECEMBER.

				d	h	m	s					d	h	m	s
I.	Eclipse	Reapp.		1	1	45	59.2	I.	Eclipse	Reapp.	W.	6	9	12	36.7
I.	Transit	Ingress		1	19	19		III.	Transit	Ingress	W.	6	9	41	
I.	Shadow	Ingress		1	20	38		III.	Transit	Egress		6	13	21	
I.	Transit	Egress		1	21	38		III.	Shadow	Ingress		6	15	2	
I.	Shadow	Egress		1	22	57		III.	Shadow	Egress		6	18	33	
II.	Occult.	Disapp.		2	3	1		I.	Transit	Ingress		7	2	47	
II.	Eclipse	Reapp.	W.	2	8	29	22.7	I.	Shadow	Ingress		7	4	5	
I.	Occult.	Disapp.		2	16	38		I.	Transit	Egress		7	5	6	
III.	Occult.	Disapp		2	19	30		I.	Shadow	Egress	W.	7	6	24	
I.	Eclipse	Reapp.		2	20	14	50.6	II.	Transit	Ingress		7	11	35	
III.	Occult.	Reapp.		2	23	9		IV.	Occult.	Disapp.		7	11	42	
III.	Eclipse	Disapp.		3	0	59	43.7	II.	Shadow	Ingress		7	14	12	
III.	Eclipse	Reapp.		3	4	21	23.1	II.	Transit	Egress		7	14	28	
I.	Transit	Ingress		3	13	48		IV.	Occult.	Reapp.		7	16	24	
I.	Shadow	Ingress		3	15	7		II.	Shadow	Egress		7	17	2	
I.	Transit	Egress		3	16	7		I.	Occult.	Disapp.		8	0	7	
I.	Shadow	Egress		3	17	26		IV.	Eclipse	Disapp.		8	0	20	12.8
II.	Transit	Ingress		3	22	14		I.	Eclipse	Reapp.		8	3	41	36.0
II.	Shadow	Ingress		4	0	53		IV.	Eclipse	Reapp.		8	4	17	27.0
II.	Transit	Egress		4	1	7		I.	Transit	Ingress		8	21	16	
II.	Shadow	Egress		4	3	43		I.	Shadow	Ingress		8	22	33	
I.	Occult.	Disapp.		4	11	8		I.	Transit	Egress		8	23	35	
I.	Eclipse	Reapp.		4	14	43	46.5	I.	Shadow	Egress		9	0	52	
I.	Transit	Ingress	W.	5	8	17		II.	Occult.	Disapp.	W.	9	5	43	
I.	Shadow	Ingress	W.	5	9	36		II.	Eclipse	Reapp.		9	11	6	37.3
I.	Transit	Egress		5	10	36		I.	Occult.	Disapp.		9	18	36	
I.	Shadow	Egress		5	11	55		I.	Eclipse	Reapp.		9	22	10	26.8
II.	Occult.	Disapp.		5	16	22		III.	Occult.	Disapp.		9	23	41	
II.	Eclipse	Reapp.		5	21	47	40.3	III.	Occult.	Reapp.		10	3	20	
I.	Occult.	Disapp.	W.	6	5	37		III.	Eclipse	Disapp.		10	5	1	59.8

WASHINGTON MEAN TIME.

DECEMBER.

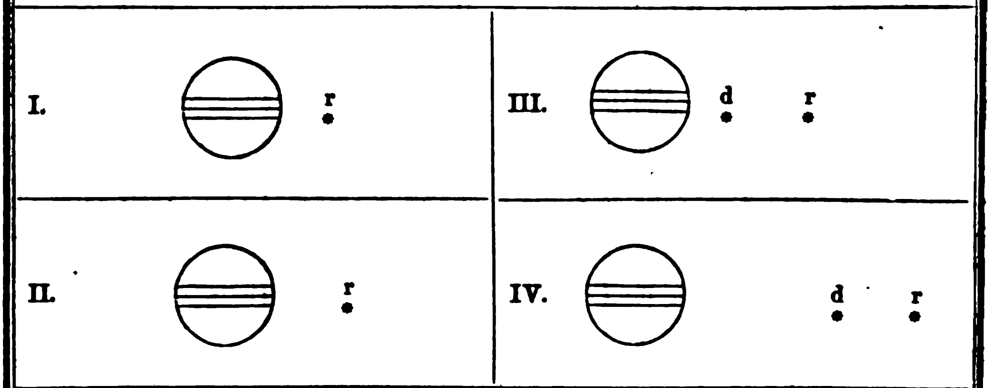
				d	h	m	s					d	h	m	s
III.	Eclipse	Reapp.	W.	10	8	22	58.4	I.	Transit	Ingress		17	17	44	
I.	Transit	Ingress		10	15	46		I.	Shadow	Ingress		17	18	58	
I.	Shadow	Ingress		10	17	2		I.	Transit	Egress		17	20	3	
I.	Transit	Egress		10	18	5		I.	Shadow	Egress		17	21	17	
I.	Shadow	Egress		10	19	21		II.	Transit	Ingress		18	3	39	
II.	Transit	Ingress		11	0	56		II.	Shadow	Ingress	W.	18	6	9	
II.	Shadow	Ingress		11	3	31		II.	Transit	Egress	W.	18	6	32	
II.	Transit	Egress		11	3	49		II.	Shadow	Egress	W.	18	8	58	
II.	Shadow	Egress	W.	11	6	21		I.	Occult.	Disapp.		18	15	5	
I.	Occult.	Disapp.		11	13	6		I.	Eclipse	Reapp.		18	18	34	52.4
I.	Eclipse	Reapp.		11	16	39	21.7	I.	Transit	Ingress		19	12	14	
I.	Transit	Ingress		12	10	15		I.	Shadow	Ingress		19	13	27	
I.	Shadow	Ingress		12	11	31		I.	Transit	Egress		19	14	33	
I.	Transit	Egress		12	12	34		I.	Shadow	Egress		19	15	46	
I.	Shadow	Egress		12	13	50		II.	Occult.	Disapp.		19	21	46	
II.	Occult.	Disapp.		12	19	4		II.	Eclipse	Reapp.		20	3	2	30.9
II.	Eclipse	Reapp.		13	0	24	6.0	I.	Occult.	Disapp.		20	9	35	
I.	Occult.	Disapp.	W.	13	7	36		I.	Eclipse	Reapp.		20	13	3	42.6
I.	Eclipse	Reapp.		13	11	8	12.7	III.	Transit	Ingress		20	18	10	
III.	Transit	Ingress		13	13	54		III.	Transit	Egress		20	21	40	
III.	Transit	Egress		13	17	33		III.	Shadow	Ingress		20	23	6	
III.	Shadow	Ingress		13	19	4		III.	Shadow	Egress		21	2	37	
III.	Shadow	Egress		13	22	35		I.	Transit	Ingress	W.	21	6	43	
I.	Transit	Ingress		14	4	45		I.	Shadow	Ingress	W.	21	7	56	
I.	Shadow	Ingress	W.	14	6	0		I.	Transit	Egress	W.	21	9	2	
I.	Transit	Egress	W.	14	7	4		I.	Shadow	Egress		21	10	15	
I.	Shadow	Egress	W.	14	8	19		II.	Transit	Ingress		21	17	2	
II.	Transit	Ingress		14	14	17		II.	Shadow	Ingress		21	19	28	
II.	Shadow	Ingress		14	16	50		II.	Transit	Egress		21	19	55	
II.	Transit	Egress		14	17	10		II.	Shadow	Egress		21	22	17	
II.	Shadow	Egress		14	19	39		I.	Occult.	Disapp.		22	4	4	
I.	Occult.	Disapp.		15	2	5		I.	Eclipse	Reapp.	W.	22	7	32	37.5
I.	Eclipse	Reapp.		15	5	37	9.1	I.	Transit	Ingress		23	1	13	
~~IV.~~	~~Transit~~	~~Ingress~~		~~15~~	~~23~~	~~14~~		~~I.~~	~~Shadow~~	~~Ingress~~		~~23~~	~~2~~	~~25~~	
I.	Transit	Ingress		15	23	14		I.	Transit	Egress		23	3	32	
I.	Shadow	Ingress		16	0	29		I.	Shadow	Egress		23	4	44	
I.	Transit	Egress		16	1	33		II.	Occult.	Disapp.		23	11	11	
I.	Shadow	Egress		16	2	48		II.	Eclipse	Reapp.		23	16	21	29.8
IV.	Transit	Egress		16	8	54		I.	Occult.	Disapp.		23	22	34	
II.	Occult.	Disapp.	W.	16	8	26		I.	Eclipse	Reapp.		24	2	1	26.8
~~IV.~~	~~Shadow~~	~~Ingress~~		~~16~~	~~11~~	~~8~~		~~IV.~~	~~Occult.~~	~~Disapp.~~	~~W.~~	~~24~~	~~7~~	~~10~~	
II.	Eclipse	Reapp.		16	13	42	59.9	III.	Occult.	Disapp.	W.	24	8	13	
IV.	Shadow	Egress		16	15	18		IV.	Occult.	Reapp.		24	11	52	
I.	Occult.	Disapp.		16	20	35		III.	Occult.	Reapp.		24	11	52	
I.	Eclipse	Reapp.		17	0	5	58.7	III.	Eclipse	Disapp.		24	13	6	3.9
III.	Occult.	Disapp.		17	3	55		III.	Eclipse	Reapp.		24	16	25	37.7
III.	Occult.	Reapp.	W.	17	7	34		IV.	Eclipse	Disapp.		24	18	38	44.9
III.	Eclipse	Disapp.	W.	17	9	4	12.2	I.	Transit	Ingress		24	19	43	
III.	Eclipse	Reapp.		17	12	24	28.8	I.	Shadow	Ingress		24	20	54	

WASHINGTON MEAN TIME.

DECEMBER.

				d	h	m	s					d	h	m	
I.	Transit	Egress		24	22	2		I.	Transit	Egress		28	11	3	
IV.	Eclipse	Reapp.		24	22	29	21.1	I.	Shadow	Egress		28	12	10	
I.	Shadow	Egress		24	23	13		II.	Transit	Ingress		28	19	47	
II.	Transit	Ingress	W.	25	6	24		II.	Shadow	Ingress		28	22	5	
II.	Shadow	Ingress	W.	25	8	47		II.	Transit	Egress		28	22	40	
II.	Transit	Egress		25	9	17		II.	Shadow	Egress		29	0	53	
II.	Shadow	Egress		25	11	35		I.	Occult.	Disapp.	W.	29	6	4	
I.	Occult.	Disapp.		25	17	4		I.	Eclipse	Reapp.		29	9	28	2.6
I.	Eclipse	Reapp.		25	20	30	19.2	I.	Transit	Ingress		30	3	13	
I.	Transit	Ingress		26	14	13		I.	Shadow	Ingress		30	4	20	
I.	Shadow	Ingress		26	15	28		I.	Transit	Egress	W.	30	5	33	
I.	Transit	Egress		26	16	33		I.	Shadow	Egress	W.	30	6	39	
I.	Shadow	Egress		26	17	41		II.	Occult.	Disapp.		30	13	58	
II.	Occult.	Disapp.		27	0	34		II.	Eclipse	Reapp.		30	18	59	6.3
II.	Eclipse	Reapp.	W.	27	5	40	1.5	I.	Occult.	Disapp.		31	0	34	
I.	Occult.	Disapp.		27	11	34		I.	Eclipse	Reapp.		31	3	56	50.9
I.	Eclipse	Reapp.		27	14	59	8.8	III.	Occult.	Disapp.		31	12	33	
III.	Transit	Ingress		27	22	30		III.	Occult.	Reapp.		31	16	10	
III.	Transit	Egress		28	2	8		III.	Eclipse	Disapp.		31	17	7	55.5
III.	Shadow	Ingress		28	3	9		III.	Eclipse	Reapp.		31	20	26	45.3
III.	Shadow	Egress	W.	28	6	39		I.	Transit	Ingress		31	21	43	
I.	Transit	Ingress	W.	28	8	43		I.	Shadow	Ingress		31	22	49	
I.	Shadow	Ingress		28	9	51									

Phases of the Eclipses of the Satellites for an Inverting Telescope.



WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h	m			h	m			h	m			h	m
March	1	17	5.0	May	18	14	50.9	Aug.	2	16	30.8	Oct.	17	17	27.3
	3	11	35.3		20	9	19.7		4	10	56.9		19	11	55.0
	5	6	5.6		22	3	48.4		6	5	23.1		21	6	22.6
	7	0	35.9		23	22	17.1		7	23	49.2		23	0	50.4
	8	19	6.2		25	16	45.6		9	18	15.4		24	19	18.2
	10	13	36.4		27	11	14.1		11	12	41.4		26	13	46.1
	12	8	6.6		29	5	42.6		13	7	7.6		28	8	14.0
	14	2	36.7		31	0	11.0		15	1	33.5		30	2	42.0
	15	21	6.9	June	1	18	39.3		16	19	59.6		31	21	10.1
	17	15	37.1		3	13	7.6		18	14	25.5	Nov.	2	15	38.3
	19	10	7.2		5	7	35.8		20	8	51.5		4	10	6.5
	21	4	37.3		7	2	4.0		22	3	17.4		6	4	35 0
	22	23	7.3		8	20	32.0		23	21	43.4		7	23	3.4
	24	17	37.4		10	15	0.0		25	16	9.3		9	17	32.0
	26	12	7.4		12	9	28.0		27	10	35.3		11	12	0.5
	28	6	37.4		14	3	55.9		29	5	1.4		13	6	29.2
	30	1	7.3		15	22	23.6		30	23	27.4		15	0	57.8
	31	19	37.2		17	16	51.5	Sept.	1	17	53.4		16	19	26.6
April	2	14	7.0		19	11	19.2		3	12	19.6		18	13	55.4
	4	8	36.9		21	5	46.8		5	6	45.7		20	8	24.3
	6	3	6 7		23	0	14.3		7	1	11.8		22	2	53.3
	7	21	36.5		24	18	41.8		8	19	38.0		23	21	22.4
	9	16	6.3		26	13	9.2		10	14	4.2		25	15	51.5
	11	10	36.0		28	7	36.6		12	8	30.4		27	10	20.6
	13	5	5.7		30	2	3.8		14	2	56.7		29	4	49.8
	14	23	35.4	July	1	20	31.1		15	21	23.0		30	23	19.1
	16	18	6.1		3	14	58.2		17	15	49.4	Dec.	2	17	48.4
	18	12	34.6		5	9	25.3		19	10	15.7		4	12	17.8
	20	7	4.1		7	3	52.3		21	4	42.2		6	6	47.2
	22	1	33.6		8	22	19.4		22	23	8.6		8	1	16.8
	23	20	3.1		10	16	46.3		24	17	35.3		9	19	46.2
	25	14	32.6		12	11	13.2		26	12	1 9		11	14	15.9
	27	9	1.9		14	5	39.9		28	6	28.6		13	8	45.4
	29	3	31.3		16	0	6.7		30	0	55.4		15	3	15.2
	30	22	0.5		17	18	33.4	Oct.	1	19	22.3		16	21	44.8
May	2	16	29.8		19	12	59.9		3	13	49.3		18	16	14.6
	4	10	59.0		21	7	26.4		5	8	16.3		20	10	44.4
	6	5	28.2		23	1	53.0		7	2	43.4		22	5	14.3
	7	23	57.3		24	20	19.3		8	21	10.5		23	23	44.2
	9	18	26.4		26	14	45.8		10	15	37.7		25	18	14.2
	11	12	55.3		28	9	12.1		12	10	5.1		27	12	44.1
	13	7	24.3		30	3	38.4		14	4	32.4		29	7	14.1
	15	1	53.2		31	22	4.6		15	22	59.8		31	1	44.2
	16	20	22.1												

SATELLITE II.

		h	m			h	m			h	m			h	m
March	3	16	18.9	April	1	3	38.7	April	29	14	39.6	May	28	1	13.9
	7	5	44.2		4	17	2.4	May	3	4	0.3		31	14	31.0
	10	19	10.2		8	6	26.1		6	17	21.0	June	4	3	47.6
	14	8	35.0		11	19	48.9		10	6	40.8		7	17	3.4
	17	22	0.7		15	9	12.1		13	20	0.6		11	6	19.0
	21	11	25.1		18	22	34.2		17	9	19.5		14	19	33.7
	25	0	50.1		22	11	56.6		20	22	38.2		18	8	48.2
	28	14	14.2		26	1	18.1		24	11	56.3		21	22	1.9

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

	h	m		h	m		h	m		h	m
June 25	11	15.0	Aug. 14	3	25.2	Oct. 2	19	10.2	Nov. 17	23	12.1
29	0	27.8	17	16	31.8	6	8	20.4	21	12	30.3
July 2	13	39.7	21	5	38.4	9	21	31.4	25	1	49.1
6	2	51.0	24	18	44.8	13	10	42.8	28	15	8.3
9	16	1.9	28	7	51.4	16	23	55.1	Dec. 2	4	28.3
13	5	12.2	31	20	58.0	20	13	7.7	5	17	48.5
16	18	21.6	Sept. 4	10	3.6	24	2	21.2	9	7	9.5
20	7	31.3	7	23	11.6	27	15	35.1	12	20	29.7
23	20	40.0	11	12	17.8	31	4	50.0	16	9	51.7
27	9	48.6	15	1	26.3	Nov. 3	18	5.1	19	23	14.6
30	22	56.5	18	14	34.3	7	7	21.0	23	12	37.5
Aug. 3	12	4.2	22	3	42.6	10	20	37.4	27	2	0.3
7	1	11.3	25	16	51.3	14	9	54.5	30	15	23.8
10	14	18.5	29	6	0.5						

SATELLITE III.

	h	m		h	m		h	m		h	m
March 5	20	22.9	May 23	19	44.1	Aug. 10	11	47.8	Oct. 28	1	27.7
13	0	51.3	30	23	44.4	17	15	5.0	Nov. 4	5	16.4
20	5	18.5	June 7	3	40.2	24	18	21.5	11	9	10.1
27	9	44.7	14	7	31.8	31	21	37.3	18	13	8.8
April 3	14	8.5	21	11	20.2	Sept. 8	0	54.4	25	17	11.8
10	18	20.5	28	15	1.8	15	4	15.2	Dec. 2	21	19.5
17	22	49.8	July 5	18	40.4	22	7	34.7	10	1	30.3
25	3	6.5	12	22	13.8	29	11	0.0	17	5	44.5
May 2	7	20.6	20	1	42.9	Oct. 6	14	29.6	24	10	1.7
9	11	31.7	27	5	7.6	13	18	4.7	31	14	21.6
16	15	40.0	Aug. 3	8	28.8	20	21	43.6			

SATELLITE IV.

	h	m		h	m		h	m		h	m
March 15	5	49.5	June 7	6	48.4	Aug. 29	11	57.1	Nov. 4	1	34.1
April 1	2	17.8	23	23	56.6	Sept. 15	12	13.4	20	19	21.5
17	22	21.3	July 10	16	5.3	Oct. 1	17	4.8	Dec. 7	14	2.7
May 4	17	54.1	27	7	17.9	18	8	48.1	24	9	31.5
21	12	45.4	Aug. 12	21	48.4						

Factors by which x' and y' in the following Table must be multiplied to obtain the coördinates x and y for any time.

p = the inclination of the northern semi-minor axis of the apparent ellipse to the circle of declination; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the Ist, of every second eclipse for the IId, and of every eclipse for the IIId and IVth Satellites.

SATELLITE I.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x′.	Factor for y′	p.	x.	y.		Factor for x′.	Factor for y′.	p.	x.	y.
March 1	0.871	+0.028	−20° 43′.5	−22″	+0″	Aug. 4	1.279	+0.457	−23° 44′.4	−34″	+3″
8	0.878	0.048	21 8.0	24	0	11	1.291	0.458	23 36.7	31	3
15	0.886	0.068	21 30.8	26	0	18	1.299	0.454	23 27.9	−27	3
22	0.895	0.088	21 52.1	28	1	25	1.303	0.447	23 18.3	. .	3
30	0.906	0.108	22 11.7	29	1	Sept. 1	1.300	0.437	23 8.7	+27	3
April 6	0.919	+0.129	−22 29.6	−31	+1	8	1.292	+0.424	−22 58.9	+32	+3
13	0.934	0.150	22 45.8	33	1	15	1.280	0.407	22 49.5	35	3
20	0.951	0.172	23 0.4	35	1	22	1.265	0.389	22 40.9	37	2
27	0.968	0.194	23 13.5	36	1	30	1.247	0.372	22 33.6	39	2
May 4	0.986	0.217	23 25.1	38	1	Oct. 7	1.226	0.355	22 27.9	41	2
11	1.006	+0.240	−23 35.2	−39	+1	14	1.201	+0.338	−22 24.0	+42	+2
18	1.028	0.263	23 43.6	40	2	21	1.177	0.322	22 22.2	43	2
25	1.051	0.286	23 50.2	41	2	28	1.152	0.308	22 22.5	43	2
June 1	1.075	0.309	23 55.6	42	2	Nov. 4	1.126	0.298	22 24.9	43	2
8	1.100	0.332	23 59.9	43	2	11	1.100	0.290	22 29.3	43	2
15	1.125	+0.355	−24 2.8	−43	+2	18	1.074	+0.283	−22 35.5	+42	+2
23	1.150	0.378	24 4.2	43	2	25	1.049	0.277	22 43.5	41	2
30	1.175	0.398	24 4.3	43	2	Dec. 2	1.026	0.274	22 52.9	40	2
July 7	1.200	0.415	24 3.0	42	3	9	1.005	0.274	23 3.3	38	2
14	1.224	0.430	24 0.3	41	3	16	0.985	0.276	23 14.7	37	2
21	1.245	+0.443	−23 56.3	−39	+3	23	0.967	+0.279	−23 26.8	+35	+2
28	1.263	+0.452	−23 51.0	−37	+3	31	0.950	+0.283	−23 39.3	+32	+2

SATELLITE II.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x′	Factor for y′.	p.	x.	y.		Factor for x′.	Factor for y′.	p.	x.	y.
March 3	0.873	+0.045	−21° 16′.5	−27″	+0″	Aug. 7	1.285	+0.461	−24° 4′.8	−38″	+5″
10	0.880	0.063	21 40.6	30	1	14	1.295	0.459	23 56.8	33	5
17	0.888	0.083	22 2.9	33	1	21	1.301	0.454	23 47.9	−27	5
25	0.898	0.104	22 23.4	36	1	28	1.303	0.446	23 38.3	. .	5
April 1	0.910	0.126	22 42.3	38	1	Sept. 4	1.298	0.434	23 28.6	+31	5
8	0.924	+0.148	−22 59.5	−41	+2	11	1.289	+0.419	−23 18.9	+37	+5
15	0.939	0.170	23 15.2	44	2	18	1.275	0.402	23 9.7	42	5
22	0.954	0.192	23 29.2	46	2	25	1.258	0.385	23 1.5	47	5
29	0.971	0.214	23 41.4	48	3	Oct. 2	1.238	0.369	22 54.9	50	4
May 6	0.991	0.237	23 51.9	50	3	9	1.216	0.353	22 50.0	52	4
13	1.013	+0.260	−24 1.2	−52	+3	16	1.191	+0.338	−22 47.0	+54	+4
20	1.035	0.283	24 9.2	54	3	24	1.166	0.324	22 46.0	55	4
28	1.058	0.306	24 15.7	56	4	31	1.140	0.313	22 47.1	56	4
June 4	1.082	0.329	24 20.6	57	4	Nov. 7	1.114	0.304	22 50.2	56	4
11	1.107	0.351	24 24.1	57	4	14	1.089	0.298	22 55.2	55	4
18	1.132	+0.373	−24 26.3	−57	+4	21	1.064	+0.295	−23 2.0	+54	+4
25	1.157	0.393	24 27.2	56	5	28	1.039	0.293	23 10.4	53	4
July 2	1.182	0.412	24 26.8	55	5	Dec. 5	1.016	0.293	23 20.1	51	4
9	1.207	0.429	24 25.0	53	5	12	0.996	0.294	23 30.8	49	4
16	1.231	0.443	24 21.9	50	5	19	0.977	0.296	23 42.2	47	4
23	1.253	+0.453	−24 17.5	−47	+5	27	0.960	+0.298	−23 54.2	+45	+4
30	1.271	+0.459	−24 11.7	−43	+5						

SATELLITE III.

Date, 1867.		At Geocentric Superior Conjunction.			At Time of Eclipse.			
					Disappearance.		Reappearance.	
		Factor for x′.	Factor for y′.	p.	x.	y.	x.	y.
March	5	0.875	−0.011	−20° 52′.0	−35″	+0″	..	+0″
	12	0.883	+0.006	21 16.2	40	0	..	0
	20	0.892	0.024	21 38.7	44	0	..	0
	27	0.902	0.043	21 59.5	48	1	..	1
April	3	0.913	0.062	22 18.6	52	1	−20	1
	10	0.927	+0.082	−22 36.0	−56	+1	−24	+1
	17	0.944	0.102	22 51.8	60	2	27	2
	24	0.961	0.122	23 5.8	64	2	30	2
May	2	0.979	0.142	23 18.2	68	2	33	2
	9	0.999	0.163	23 28.9	71	3	36	3
	16	1.021	+0.184	−23 38.1	−74	+3	−38	+3
	23	1.044	0.206	23 45.7	76	3	40	3
	30	1.068	0.227	23 51.9	78	4	41	4
June	7	1.093	0.248	23 56.6	79	4	41	4
	14	1.118	0.269	23 59.8	80	5	40	5
	21	1.144	+0.289	−24 1.6	−79	+5	−38	+5
	28	1.171	0.306	24 2.0	78	5	36	5
July	5	1.196	0.321	24 1.0	75	6	33	6
	12	1.220	0.336	23 58.5	71	6	−28	6
	20	1.242	0.346	23 54.6	66	6	..	6
	27	1.261	+0.354	−23 49.4	−59	+6	..	+6
Aug.	3	1.277	0.360	23 42.8	51	6	..	6
	10	1.290	0.361	23 34.9	43	6	..	6
	17	1.299	0.358	23 26.0	34	6	..	6
	24	1.302	0.352	23 16.3	−24	6	..	6
	31	1.300	+0.342	−23 6.0	..	+6	+32	+6
Sept.	8	1.293	0.330	22 56.1	..	6	41	6
	15	1.282	0.316	22 46.5	..	5	50	5
	22	1.268	0.300	22 37.5	..	5	58	5
	29	1.249	0.284	22 29.8	..	5	64	5
Oct.	6	1.225	+0.268	−22 23.9	+27	+5	+69	+5
	13	1.201	0.254	22 19.8	32	4	74	4
	20	1.177	0.241	22 17.9	36	4	77	4
	28	1.152	0.230	22 18.1	39	4	78	4
Nov.	4	1.126	0.220	22 20.5	41	4	79	4
	11	1.100	+0.212	−22 25.2	+41	+3	+78	+3
	18	1.075	0.207	22 31.5	41	3	76	3
	25	1.050	0.203	22 39.7	40	3	74	3
Dec.	2	1.026	0.202	22 49.2	38	3	72	3
	10	1.004	0.203	23 0.3	36	3	69	3
	17	0.985	+0.205	−23 12.0	+33	+3	+66	+3
	24	0.967	0.209	23 24.4	30	3	62	3
	31	0.950	+0.214	−23 37.4	+26	+4	+58	+4

SATELLITE IV.

Date, 1867.	At Geocentric Superior Conjunction.			At Time of Eclipse.			
				Disappearance.		Reappearance.	
	Factor for x'.	Factor for y'.	p.	x.	y.	x.	y.
March 15	0.885	+0.008	−21° 12′.7	− 59″	+ 0″	− 27″	+ 0″
31	0.910	0.043	22 1.7	77	1	44	1
April 17	0.944	0.081	22 41.3	93	3	60	3
May 4	0.984	0.121	23 11.8	108	4	73	4
21	1.038	0.159	23 33.2	120	6	83	6
June 7	1.092	+0.204	−23 46.4	−125	+ 7	− 86	+ 7
23	1.154	0.244	23 51.7	122	8	82	8
July 10	1.213	0.277	23 49.2	110	10	68	10
27	1.261	0.299	23 38.9	86	10	− 43	10
Aug. 12	1.294	0.303	23 21.5	− 53	10	. .	10
29	1.301	+0.292	−22 59.1	. .	+10	+ 31	+10
Sept. 15	1.282	0.268	22 35.2	+ 26	9	69	9
Oct. 1	1.243	0.238	22 17.1	57	8	98	8
18	1.188	0.209	22 7.5	78	7	115	7
Nov. 4	1.126	0.187	22 9.6	87	6	122	6
20	1.065	+0.173	−22 22.9	+ 86	+ 6	+118	+ 6
Dec. 7	1.014	0.170	22 45.4	79	6	109	6
24	0.967	+0.174	−23 13.7	+ 67	+ 6	+ 95	+ 6

SATELLITE I.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

t	x'	y'	t	x'	y'	t	x'	y'
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+109.1	− 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	− 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.2	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	− 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.2	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	− 4.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE I.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 16 0	+ 76.4	− 4.7	1 1 40	− 66.6	− 5.2	1 11 0	− 97.6	+ 3.0
0 16 20	72.5	5.0	1 2 0	70.8	5.0	1 11 20	95.1	3.3
0 16 40	68.4	5.2	1 2 20	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 20	59.6	5.5	1 3 0	82.2	4.4	1 12 20	86.1	4.1
0 17 40	+ 55.0	− 5.7	1 3 20	− 85.6	− 4.1	1 12 40	− 82.7	+ 4.3
0 18 0	50.3	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 20	45.5	6.0	1 4 0	91.9	3.6	1 13 20	75.3	4.8
0 18 40	40.5	6.1	1 4 20	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 20	+ 30.4	− 6.4	1 5 0	− 99.6	− 2.7	1 14 20	− 62.8	+ 5.4
0 19 40	25.2	6.4	1 5 20	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 20	14.6	6.6	1 6 0	105.1	1.8	1 15 20	49.0	5.9
0 20 40	9.2	6.6	1 6 20	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 3.8	− 6.6	1 6 40	−107.5	− 1.2	1 16 0	− 39.1	+ 6.2
0 21 20	− 1.5	6.6	1 7 0	108.3	0.8	1 16 20	34.0	6.3
0 21 40	6.9	6.6	1 7 20	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	− 0.2	1 17 0	23.7	6.5
0 22 20	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 20	18.4	6.5
0 22 40	− 22.9	− 6.5	1 8 20	−108.9	+ 0.5	1 17 40	− 13.0	+ 6.6
0 23 0	28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 20	33.3	6.3	1 9 0	107.6	1.1	1 18 20	− 2.3	6.6
0 23 40	38.4	6.2	1 9 20	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 20	− 48.3	− 5.9	1 10 0	−103.8	+ 2.1	1 19 20	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 20	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	− 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 20	− 62.2	− 5.4						

SATELLITE II.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+12.2	0 10 40	+122.9	+ 8.6	0 21 20	+173.8	− 0.0
0 0 40	8.5	12.2	0 11 20	128.8	8.2	0 22 0	173.6	0.6
0 1 20	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.2
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 20	171.8	1.8
0 2 40	33.9	12.0	0 13 20	144.5	6.8	1 0 0	170.4	2.4
0 3 20	+ 42.2	+11.8	0 14 0	+149.0	+ 6.3	1 0 40	+168.5	− 3.0
0 4 0	50.5	11.7	0 14 40	153.2	5.7	1 1 20	166.2	3.5
0 4 40	58.6	11.5	0 15 20	157.0	5.2	1 2 0	163.5	4.1
0 5 20	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 20	157.0	5.2
0 6 40	+ 81.9	+10.8	0 17 20	+166.3	+ 3.5	1 4 0	+153.2	− 5.8
0 7 20	89.4	10.5	0 18 0	168.6	3.0	1 4 40	149.0	6.3
0 8 0	96.6	10.1	0 18 40	170.5	2.4	1 5 20	144.4	6.8
0 8 40	103.6	9.8	0 19 20	171.9	1.8	1 6 0	139.5	7.3
0 9 20	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+116.7	+ 9.0	0 20 40	+173.6	+ 0.6	1 7 20	+128.6	− 8.2

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
1 8 0	+122.7	− 8.6	2 3 20	−103.7	− 9.8	2 22 0	−156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	−10.5	2 6 40	−134.5	− 7.7	3 1 20	−134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	−11.7	2 10 0	−157.1	− 5.2	3 4 40	−103.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.8	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	−12.2	2 13 20	−170.4	− 2.3	3 8 0	− 66.1	+11.3
1 18 40	− 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	− 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	− 34.1	−12.0	2 16 40	−173.6	+ 0.6	3 11 20	− 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	− 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.2
2 0 40	− 74.5	−11.0	2 20 0	−166.2	+ 3.5	3 14 40	+ 17.5	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	−160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	− 96.7	−10.1						

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	− 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.2	1 1 20	221.4	10.5	1 22 40	274.7	2.3
0 5 20	53.6	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.2
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	− 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.4	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	− 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	−11.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
2 16 0	+199.5	−12.1	4 6 40	−158.4	−14.3	5 20 0	−255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.3
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	−14.8	4 13 20	−208.6	−11.5	6 2 40	−221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	−16.6	4 20 0	−246.5	− 8.0	6 9 20	−174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	−17.4	5 2 40	−269.8	− 4.0	6 16 0	−117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	− 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.3	17.4	5 6 40	276.2	1.5	6 20 0	79.8	16.7
3 17 20	33.7	17.3	5 8 0	277.0	− 0.6	6 21 20	66.8	16.9
3 18 40	− 47.1	−17.2	5 9 20	−277.2	+ 0.2	6 22 40	− 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	− 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	−111.5	−16.0	5 16 0	−268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	185.7	15.2	5 18 40	−260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	−147.2	−14.8						

SATELLITE IV.

t	x'	y'	t	x'	y'	t	x'	y'
d. h.	"	"	d. h.	"	"	d. h.	"	"
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	− 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.2	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	− 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	−13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	−20.6

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t		x′	y′	t		x′	y′	t		x′	y′
d.	h.	″	″	d.	h.	″	″	d.	h.	″	″
6	0	+379.2	−21.9	9	18	−240.1	−30.3	13	12	−457.6	+12.0
6	3	364.4	23.1	9	21	259.7	29.5	13	15	449.3	13.5
6	6	348.8	24.3	10	0	278.7	28.6	13	18	440.0	15.0
6	9	332.5	25.5	10	3	297.2	27.6	13	21	429.7	16.4
6	12	315.4	26.6	10	6	315.0	26.6	14	0	418.5	17.8
6	15	+297.6	−27.6	10	9	−332.1	−25.5	14	3	−406.3	+19.2
6	18	279.2	28.5	10	12	348.4	24.4	14	6	393.2	20.6
6	21	260.2	29.4	10	15	363.9	23.2	14	9	379.3	21.9
7	0	240.6	30.3	10	18	378.7	21.9	14	12	364.6	23.1
7	3	220.5	31.1	10	21	392.7	20.6	14	15	349.1	24.3
7	6	+199.9	−31.8	11	0	−405.8	−19.3	14	18	−332.8	+25.4
7	9	178.8	32.4	11	3	418.0	17.9	14	21	315.7	26.5
7	12	157.4	33.0	11	6	429.3	16.5	15	0	298.0	27.5
7	15	135.6	33.5	11	9	439.6	15.0	15	3	279.6	28.5
7	18	113.5	33.9	11	12	449.0	13.5	15	6	260.5	29.4
7	21	+ 91.2	−34.2	11	15	−457.4	−12.0	15	9	−240.9	+30.3
8	0	68.7	34.5	11	18	464.8	10.5	15	12	220.8	31.1
8	3	46.0	34.7	11	21	471.2	8.9	15	15	200.2	31.8
8	6	23.2	34.8	12	0	476.5	7.3	15	18	179.2	32.4
8	9	+ 0.3	34.8	12	3	480.8	5.7	15	21	157.7	33.0
8	12	− 22.5	−34.8	12	6	−484.0	− 4.1	16	0	−135.9	+33.5
8	15	45.3	34.7	12	9	486.2	2.5	16	3	113.8	33.9
8	18	68.0	34.5	12	12	487.3	− 0.8	16	6	91.5	34.2
8	21	90.5	34.2	12	15	487.3	+ 0.8	16	9	69.0	34.5
9	0	112.9	33.9	12	18	486.3	2.4	16	12	46.3	34.7
9	3	−135.0	−33.5	12	21	−484.2	+ 4.0	16	15	− 23.5	+34.8
9	6	156.8	33.0	13	0	480.9	5.7	16	18	− 0.6	34.8
9	9	178.2	32.4	13	3	476.6	7.3	16	21	+ 22.2	34.8
9	12	199.3	31.8	13	6	471.3	8.9	17	0	+ 45.0	+34.7
9	15	−220.0	−31.1	13	9	−465.0	+10.5				

THE APPARENT ELEMENTS OF SATURN'S RING.

Mean Noon.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic.
Jan. 0	35″.69	4″.29	+1° 46′.2	+22° 51′.8	+21° 40′.4	283° 54′.1	240° 48′.3
20	36.66	4.38	1 59.3	23 20.6	21 51.1	285 38.1	242 23.3
Feb. 9	37.79	4.50	2 7.8	23 20.6	22 1.3	286 45.2	243 37.6
March 1	39.18	4.65	2 11.2	23 21.9	22 11.2	287 12.6	244 7.0
21	40.43	4.80	2 9.9	23 15.0	22 21.0	286 56.6	243 51.0
April 10	41.44	4.94	2 2.2	23 1.1	22 30.8	286 1.3	242 55.8
30	42.02	5.04	1 51.5	22 42.5	22 40.3	284 38.0	241 32.6
May 20	42.06	5.08	1 39.6	22 22.5	22 49.7	283 3.7	239 58.4
June 9	41.55	5.04	1 28.7	22 5.2	22 58.9	281 37.5	238 32.2
29	40.61	4.94	1 20.9	21 54.7	23 7.9	280 36.0	237 30.7
July 19	39.40	4.80	1 17.6	21 53.5	23 16.7	280 9.8	237 4.7
Aug. 8	38.10	4.64	1 19.4	22 2.3	23 25.4	280 23.6	237 18.6
28	36.87	4.48	1 26.2	22 20.2	23 33.9	281 16.9	238 11.9
Sept. 17	35.82	4.33	1 37.5	22 45.2	23 42.3	282 45.3	239 40.4
Oct. 7	35.02	4.20	1 52.4	23 14.4	23 50.4	284 42.5	241 37.6
27	34.66	4.11	2 9.9	23 45.1	23 58.4	287 0.8	243 56.0
Nov. 16	34.30	4.02	2 29.6	24 14.4	24 6.3	289 31.4	246 26.6
Dec. 6	34.39	3.97	2 48.0	24 40.2	24 14.0	292 4.7	249 0.0
26	34.86	3.96	3 5.9	25 1.0	24 21.4	294 30.6	251 25.9
31	35.02	3.96	+3 10.0	+25 5.4	+24 23.0	295 4.7	252 0.1

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 log. Factor = 9.9445
The outer ellipse of the inner Ring = 0.8599 " = 9.9344
The inner ellipse of the inner Ring = 0.6650 " = 9.8228
The inner ellipse of Bond's dusky Ring = 0.5486 " = 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1867.	Venus.	Mars.	1867.	Venus.	Mars.
January 15	0.257	0.998	July 15	0.942	0.937
February 15	0.472	0.952	August 15	0.982	0.956
March 15	0 606	0.913	September 15	0 999	0.972
April 15	0.720	0.899	October 15	0.997	0.985
May 15	0.809	0.904	November 15	0.976	0.994
June 15	0.886	0.919	December 15	0.942	0.999

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
Jan.	2	12	30	☌ ♀ ☾ ..... ♀ −	0	5
	3	9	0	☌ ☿ ☾ ..... ☿ −	4	7
	7	6	34	☌ ♃ ☾ ..... ♃ −	4	25
	9	19	12	☿ in ☋		
	10	3	51	☍ ♂ ☉		
	10	20	52	♀ in Perihelion.		
	12	0	45	☌ ♆ ☾ ..... ♆ −	0	17
	17	23	34	☌ ♅ ☾ ..... ♅ +	5	19
	18	19	34	☌ ♂ ☾ ..... ♂ +	8	58
	19	23	27	☿ in Aphelion.		
	28	4	22	☌ ♄ ☾ ..... ♄ −	2	14
	31	0	54	☌ ♀ ☾ ..... ♀ −	0	29
Feb.	1	23	57	♀ greatest Hel. Lat. N.		
	3	0	55	☌ ♃ ☉		
	3	17	19	☌ ☿ ☾ ..... ☿ −	5	46
	4	1	53	☌ ♃ ☾ ..... ♃ −	4	0
	6	15	56	☌ ☿ ♃ ..... ☿ −	1	30
	8	6	55	☌ ♆ ☾ ..... ♆ −	0	1
	9	9	20	☿ greatest Hel. Lat. S.		
	10	23	30	☌ ☿ ☉ Sup.		
	12	5	29	□ ♄ ☉		
	14	6	40	☌ ♅ ☾ ..... ♅ +	5	27
	14	18	36	☌ ♂ ☾ ..... ♂ +	8	44
	18	5	22	♂ stationary.		
	19	17	28	♀ greatest elong. W.	46	48
	24	14	23	☌ ♄ ☾ ..... ♄ −	2	15
	28	9	15	☿ in ☊		
Mar.	1	18	28	☌ ♀ ☾ ..... ♀ −	2	12
	3	16	47	♄ stationary.		
	3	22	21	☌ ♃ ☾ ..... ♃ −	3	36
	4	23	4	☿ in Perihelion.		
	5	–	–	☉ Eclipsed, invis. at Wash.		
	7	1	2	☌ ☿ ☾ ..... ☿ +	2	38
	7	14	52	☌ ♆ ☾ ..... ♆ +	0	7
	9	9	35	☿ greatest elong. E.	18	19
	12	7	28	♅ stationary.		
	13	12	9	☌ ♅ ☾ ..... ♅ +	5	31
	14	2	4	♂ greatest Hel. Lat. N.		
	14	6	29	☌ ♂ ☾ ..... ♂ +	7	54
	15	6	47	☿ greatest Hel. Lat. N.		
	16	4	52	☿ stationary.		
	19	–	–	☾ eclipsed, vis. at Wash.		
	20	8	30	☉ enters ♈, spring begins.		
	23	22	26	☌ ♄ ☾ ..... ♄ −	2	15
	24	18	12	□ ♅ ☉		
	26	4	23	☌ ☿ ☉ Inf.		
	30	1	24	♀ in ☋		
	31	3	32	☌ ♀ ♃ ..... ♀ +	0	41
	31	18	46	☌ ♃ ☾ ..... ♃ −	3	10

	d	h	m		°	′
Mar.	31	19	59	☌ ♀ ☾ ..... ♀ −	2	26
Apr.	2	0	16	☌ ♆ ☉		
	3	2	12	☌ ☿ ☾ ..... ☿ +	1	55
	4	1	14	☌ ♆ ☾ ..... ♆ +	0	13
	7	15	36	☿ stationary.		
	7	18	28	☿ in ☋		
	9	18	15	☌ ♅ ☾ ..... ♅ +	5	26
	11	4	27	☌ ♂ ☾ ..... ♂ +	6	56
	15	6	24	□ ♂ ☉		
	17	14	52	♂ in Aphelion.		
	17	22	41	☿ in Aphelion.		
	20	3	28	☌ ♄ ☾ ..... ♄ −	2	4
	22	10	35	☿ greatest elong. W.	27	13
	28	13	15	☌ ♃ ☾ ..... ♃ −	2	42
	29	6	10	☌ ☿ ♆ ..... ☿ −	1	30
	30	19	39	☌ ♀ ☾ ..... ♀ −	0	40
May	1	12	56	☌ ♆ ☾ ..... ♆ +	0	20
	1	18	5	☌ ☿ ☾ ..... ☿ −	0	54
	3	4	41	♀ in Aphelion.		
	7	2	56	☌ ♅ ☾ ..... ♅ +	5	16
	8	8	35	☿ greatest Hel. Lat. S.		
	9	8	34	☌ ♂ ☾ ..... ♂ +	5	28
	9	19	10	☌ ♀ ♆ ..... ♀ −	0	15
	11	7	37	☍ ♄ ☉		
	17	6	20	☌ ♄ ☾ ..... ♄ −	1	56
	25	21	55	♀ greatest Hel. Lat. S.		
	26	3	55	☌ ♃ ☾ ..... ♃ −	2	17
	27	5	40	□ ♃ ☉		
	27	8	30	☿ in ☊		
	29	0	6	☌ ♆ ☾ ..... ♆ +	0	33
	30	16	18	☌ ♀ ☾ ..... ♀ +	2	3
	31	1	46	☌ ☿ ☉ Sup.		
	31	22	20	☿ in Perihelion.		
June	2	0	57	☌ ☿ ☾ ..... ☿ +	5	58
	3	14	32	☌ ♅ ☾ ..... ♅ +	5	6
	6	17	16	☌ ♂ ☾ ..... ♂ +	3	47
	11	6	6	☿ greatest Hel. Lat. N.		
	13	7	0	☌ ☿ ♅ ..... ☿ +	1	44
	13	8	32	☌ ♄ ☾ ..... ♄ −	2	0
	21	5	4	☉ enters ♋, summer begins.		
	22	13	17	☌ ♃ ☾ ..... ♃ −	2	1
	25	9	12	☌ ♆ ☾ ..... ♆ +	0	49
	26	22	7	♃ stationary.		
	29	12	42	☌ ♀ ☾ ..... ♀ +	4	9
	30	5	6	☌ ♅ ☉		
July	1	3	47	☌ ♅ ☾ ..... ♅ +	5	0
	2	4	12	☉ in Apogee.		
	3	2	15	☌ ☿ ☾ ..... ☿ +	3	34
	4	17	43	☿ in ☋		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	5	4	46	☌ ♂ ☾ . . . . . ♂ +	1	48
	5	15	4	☿ greatest elong. E.	26	11
	7	0	9	□ ♆ ☉		
	10	12	26	☌ ♄ ☾ . . . . . ♄ −	2	15
	14	21	58	☿ in Aphelion.		
	18	18	36	☿ stationary.		
	19	2	–	♆ stationary		
	19	17	20	☌ ♃ ☾ . . . . . ♃ −	2	3
	20	8	3	☌ ♀ ♅ . . . . . ♀ −	0	22
	21	4	44	♀ in ☊		
	22	5	23	♄ stationary.		
	22	15	46	☌ ♆ ☾ . . . . . ♆ +	1	2
	28	16	50	☌ ♅ ☾ . . . . . ♅ +	5	0
	29	10	20	☌ ♀ ☾ . . . . . ♀ +	4	33
	30	18	38	☌ ☿ ☾ . . . . . ☿ −	2	11
Aug.	2	11	57	☌ ☿ ☉ Inf.		
	2	18	56	☌ ♂ ☾ . . . . . ♂ −	0	21
	4	7	52	☿ greatest Hel. Lat. S.		
	6	19	24	☌ ♄ ☾ . . . . . ♄ −	2	39
	9	19	6	☌ ☿ ♀ . . . . . ☿ −	4	37
	10	5	19	□ ♄ ☉		
	12	3	16	☿ stationary.		
	15	17	59	☌ ♃ ☾ . . . . . ♃ −	2	20
	18	20	42	☌ ♆ ☾ . . . . . ♆ +	1	6
	20	14	4	☿ greatest elong. W.	18	27
	23	7	45	☿ in ☊		
	23	12	52	♀ in Perihelion.		
	25	3	51	☌ ♅ ☾ . . . . . ♅ +	5	1
	25	14	17	☍ ♃ ☉		
	27	17	25	☌ ☿ ☾ . . . . . ☿ +	3	16
	27	21	37	☿ in Perihelion.		
	28	8	25	☌ ♀ ☾ . . . . . ♀ +	2	53
	28	–	–	☉ Eclipsed, invis. at Wash.		
	31	11	37	☌ ♂ ☾ . . . . . ♂ −	2	22
Sept.	3	5	49	☌ ♄ ☾ . . . . . ♄ −	2	49
	7	5	23	☿ greatest Hel. Lat. N.		
	10	3	48	☌ ☿ ♀ . . . . . ☿ +	0	22
	11	18	45	☌ ♃ ☾ . . . . . ♃ −	2	42
	13	–	–	☾ eclipsed, vis. at Wash.		
	14	16	37	☌ ☿ ☉ Sup.		
	14	16	40	♀ greatest Hel. Lat. N.		
	15	1	51	☌ ♆ ☾ . . . . . ♆ +	1	3
	21	11	57	☌ ♅ ☾ . . . . . ♅ +	4	59
	22	19	27	☉ enters ♎, autumn begins.		
	24	23	10	☌ ♀ ☉		
	27	7	20	☌ ♀ ☾ . . . . . ♀ −	0	34
	27	13	38	♂ in ☋		
	28	0	10	☌ ☿ ☾ . . . . . ☿ −	2	30
	29	8	2	☌ ♂ ☾ . . . . . ♂ −	4	7
	30	16	58	☿ in ☋		
Sept.	30	19	1	☌ ♄ ☾ . . . . . ♄ −	2	57
Oct.	5	20	22	□ ♅ ☉		
	6	16	56	☍ ♆ ☉		
	8	22	49	☌ ♃ ☾ . . . . . ♃ −	2	49
	10	21	14	☿ in Aphelion.		
	12	8	37	☌ ♆ ☾ . . . . . ♆ +	0	58
	18	17	34	♅ stationary.		
	18	17	52	☌ ♅ ☾ . . . . . ♅ +	4	52
	19	5	36	☌ ☿ ♂ . . . . . ☿ −	1	55
	23	21	9	♃ stationary.		
	25	9	47	☌ ☿ ♄ . . . . . ☿ −	4	45
	27	10	32	☌ ♀ ☾ . . . . . ♀ −	4	0
	28	5	30	☌ ♂ ☾ . . . . . ♂ −	5	13
	28	9	14	☌ ♄ ☾ . . . . . ♄ −	2	59
	28	16	7	☌ ☿ ☾ . . . . . ☿ −	7	52
	31	6	33	☿ greatest elong. E.	23	39
Nov.	5	7	23	☌ ♃ ☾ . . . . . ♃ −	2	35
	6	20	18	☌ ♀ ♄ . . . . . ♀ −	1	49
	8	17	7	☌ ♆ ☾ . . . . . ♆ +	1	5
	9	18	9	♀ in ☋		
	11	1	17	☿ stationary.		
	14	6	37	☌ ♀ ♂ . . . . . ♀ +	0	21
	14	23	45	☌ ♅ ☾ . . . . . ♅ +	4	41
	15	3	35	☌ ☿ ♀ . . . . . ☿ −	1	8
	15	11	2	☌ ☿ ♂ . . . . . ☿ −	0	43
	18	18	36	☌ ♄ ☉		
	19	6	58	☿ in ☊		
	21	1	11	□ ♃ ☉		
	21	7	59	☌ ☿ ☉ Inf.		
	22	18	58	☌ ☿ ♄ . . . . . ☿ −	4	24
	23	20	50	☿ in Perihelion.		
	24	18	1	☌ ☿ ☾ . . . . . ☿ −	3	9
	24	22	55	☌ ♄ ☾ . . . . . ♄ −	3	4
	26	7	2	☌ ♂ ☾ . . . . . ♂ −	5	37
	26	21	15	☌ ♀ ☾ . . . . . ♀ −	5	38
Dec.	2	19	46	☌ ♃ ☾ . . . . . ♃ −	2	0
	4	4	39	☿ greatest Hel. Lat. N.		
	6	2	8	☌ ♆ ☾ . . . . . ♆ +	1	17
	9	1	0	☿ greatest elong. W.	21	0
	11	19	29	☌ ☿ ♄ . . . . . ☿ +	0	9
	12	7	30	☌ ♅ ☾ . . . . . ♅ +	4	35
	13	20	25	♀ in Aphelion.		
	21	13	31	☉ enters ♑, winter begins.		
	22	11	16	☌ ♄ ☾ . . . . . ♄ −	3	16
	23	16	35	☌ ☿ ☾ . . . . . ☿ −	4	33
	25	10	59	☌ ♂ ☾ . . . . . ♂ −	5	15
	27	11	41	☌ ♀ ☾ . . . . . ♀ −	4	43
	27	16	14	☿ in ☋		
	30	10	44	☌ ♃ ☾ . . . . . ♃ −	1	18

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h m s	° ′ ″	° ′ ″
Åbo, ...	+60 26 56.8	— 6 37 20.0	260 40 0.6	337 42 48.6
Albany, ...	+42 39 50.0	— 0 13 12.6	356 41 51.0	73 44 39.0
Altona, ...	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Ann Arbor, . . .	+42 16 48.0	+ 0 26 41.0	6 40 15.0	83 43 3.0
Athens, ...	+37 58 20.0	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin, ...	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk, ...	+51 12 25.0	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn, ...	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau, ...	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels, ...	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.), .	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3.0	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania, . . .	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati, . . .	+39 5 54.0	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen, . . .	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow, ...	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat, ...	+58 22 47.1	— 6 55 5.8	256 13 33.6	333 16 21.6
Dublin, ...	+53 23 13.0	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham, ...	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh, . . .	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence, ...	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva, ...	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown, . . .	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen, . . .	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha, ...	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich, . . .	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0.0
Hamburg, ...	+53 33 7.0	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson, ...	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan, ...	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg, . . .	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster, . .	+48 3 23.8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic, ...	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden, ...	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool, ...	+53 24 47.4	— 4 56 11.1	285 57 13.7	3 0 1.7
London, ...	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras, ...	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim, . . .	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree, ...	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles, . . .	+43 17 49.0	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan, ...	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena, ...	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow, ...	+55 45 19.8	— 7 38 28.1	245 22 58.5	322 25 46.5
Munich, ...	+48 8 45.0	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples, ...	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Olmutz, ...	+49 35 40.0	— 6 17 11.3	265 42 10.5	342 44 58.5
Oxford, ...	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua, ...	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo, ...	+38 6 44.0	— 6 1 36.7	269 35 50.1	346 38 38.1
Paramatta, . . .	—33 48 49.8	+ 8 47 42.6	131 55 38.3	208 58 26.3
Paris, ...	+48 50 13.2	— 5 17 32.7	280 36 50.1	357 39 38.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h m s	° ′ ″	° ′ ″
St. Petersburg, . .	+59 56 29.7	—7 9 24.7	252 38 49.8	329 41 37.8
Philadelphia, . . .	+39 57 7.5	—0 7 33.6	358 6 35.4	75 9 23.4
Prague, ...	+50 5 18.5	—6 5 53.2	268 31 42.6	345 34 30.6
Pulkowa, ...	+59 46 18.7	—7 9 29.9	252 37 31.9	329 40 19.9
Rome, ...	+41 53 54.0	—5 58 5.9	270 28 31.5	347 31 19.5
San Fernando, . .	+36 27 45.0	—4 43 22.1	289 9 29.1	6 12 17.1
Santiago, ...	—33 26 24.8	—0 25 52.3	353 31 55.5	70 34 43.5
Senftenberg, . . .	+50 5 10.1	—6 14 1.1	266 29 43.1	343 32 31.1
Upsala, ...	+59 51 31.5	—6 18 42.4	265 19 24.0	342 22 12.0
Vienna, ...	+48 12 35.5	—6 13 43.7	266 34 4.1	343 36 52.1
Washington, . . .	+38 53 39.3	0 0 0.0	0 0 0.0	77 2 48.0
Wilna, ...	+54 40 59.1	—6 49 23.0	257 39 15.5	334 42 3.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

This Ephemeris is divided into two distinct parts. One part is designed for the special use of Navigators, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of Astronomers, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the Distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1867.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time.—Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

Solar Time.—Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time*. By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

The vernal equinox, by the motion of which Sidereal Time is measured, is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time*, and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^s.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Day.—According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, $2^{h.}$ A. M., *civil day*, is January 9th, $14^{h.}$, *astronomical day;* and January 9th, $2^{h.}$ P. M., *civil day*, is also January 9th, $2^{h.}$, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:—

Pages I., II., III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to apparent noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of BOWDITCH'S *American Practical Navigator.* The use of the sun's declination in finding the true amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at $3^{h.}$ $40^{m.}$ P. M. of Saturday, January 19th, 1867, the declination of the sun would be taken out first for

	°	′	″	
January 19th, at noon.	20	22	7.7	S.
From which subtract the diff. for 1 hour, 31″.42, multiplied by 3,		1	34.3	
	20	20	33.4	
And the proportional part for 40 minutes,			20.9	
The result is the sun's declination on the 19th, at 3^h 40^m P. M.,	20	20	12.5	

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this Ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent time*, or the time given by an observation of the sun, to obtain the *mean time*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 24th, at 3^h 20^m P. M., were required, we should have

	m s
Equation for January 24, at noon,	12 19.37
Correction for 3^h 20^m (additive),	2.01
Equation, January 24, at 3^h 20^m P. M.,	12 21.38

Which, according to the rule at the head of the column, is *to be added* to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich *Mean* Noon; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ'; and one, λ, is the Sun's longitude counted from the true equinox of the date; the other, λ', is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the Sun's longitude for any hour from noon. The hourly differences of the logarithm of the Radius Vector are likewise given. The longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XI. of Bowditch's *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M., of the 12th of Jan., then we say, that as twelve hours is to $5''.5$, the whole difference between the semidiameters at noon and midnight of the 12th, so is nine hours to $4''.1$, the correction to be added to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for Jan. 12^d 9^h is $15'$ $47''.6$. Adjoining the columns containing the Moon's

Horizontal Parallax for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from Bowditch's Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Monday, January 21^d 8^h 10^m, we have only to add to the right ascension at 8^h as given in the Ephemeris, viz. to 9^h 33^m $22^s.11$, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of $2^s.3531$ by 10, or $23^s.53$; the result is the moon's right ascension at the required time, equal to 9^h 33^m $45^s.64$. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be subtractive, because the declination, unlike the right ascension, is decreasing; thus,

Moon's declination for January 21^d 8^h	11° 35′ 58″.2 N.
Correction for 10^m is 88″.5	1 28.5
Moon's declination for January 21^d 8^h 10^m	11 34 29.7

The last page of the right ascensions and declinations contains the *Phases* of the Moon, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distances from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the British *Nautical Almanac*, in order to conform to the rules of Bowditch's *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letter E. or W. is affixed to the name of the star or planet, to indicate whether it is on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 22d of May, at midnight, of Greenwich meantime, the distance of the moon's centre from the planet Saturn, west of her, is 59° 45′ 17″, and at 15 hours of the same date it is 61° 14′ 41″; the difference between the two distances is 1° 29′ 24″, or, reduced to seconds, is 5364″, the logarithm of which, subtracted from the logarithm of three hours, or 10800^s, gives for the proportional logarithm of the difference between the two distances 3039, as it is in the column headed *P. L. of diff.* If the calculated *true distance* of the navigator lie between the two given distances above mentioned, as, for instance, if it should be 60° 20′ 3″, the corresponding correction of the time would be found as follows:—

		°	′	″
Distance in the Ephemeris at Midnight,		59	45	17
Calculated *True Distance*,		60	20	3
Difference,		0	34	46
Prop. log. in Ephemeris,	3039			
Prop. log. of Difference, 0° 34′ 46″,	7141			
Prop. log. of $1^h 10^m 0^s$,	4102			

And this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance $1^h 10^m 0^s$ on the morning of the 23d of May.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 7 of the Appendix, and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The Ephemeris of the Planets, from page 218 to page 241, consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar rectangular Equatorial Coördinates, referred to the true equinox and equator of date, for Greenwich mean noon, on pages 242 – 244, are added, and the Moon's Longitude and Latitude on pages 245 – 248.

Finally, the Mean Places, with their annual variations, of one hundred and ninety-eight Fixed Stars for the beginning of the year 1867 are given on pages 262 – 265.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. of each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or 0^h. If, then, a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, α Tauri (*Aldebaran*), on the evening of January 1, 1867, the process for obtaining the time of meridian passage would be as follows: —

	h	m	s
Mean Time of sidereal 0^h January 1, 1867,	5	16	27
Correction for Longitude omitted.			
Right Ascension of α Tauri (*Aldebaran*),	4	28	17
Time of star's meridian passage,	9	44	44

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in Bowditch's *Navigator*, page 223.

THE ASTRONOMICAL PART.

THIS part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 250.—On this page are given the apparent obliquity, the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars.—The Logarithms of BESSEL'S A, B, C, D, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every midnight. To these tables are added BESSEL'S formulas of reduction, by which the tabular quantities were computed, with PETERS'S coefficients, and BESSEL'S notation. (Pages 251 - 261.)

The *mean* places of 198 Fixed Stars are given for the instant when the sun's mean longitude was 280° (1867, Jan. $0^d + .109$). Those of 52 *circumpolar* stars (stars within 25° of either pole) are given on page 262, and those of 146 *time* stars (stars within 65° of the equator) on pages 263 - 265. The *apparent* places of α, ϵ, δ, and λ, Ursæ Minoris, are given for every upper transit at Washington, pages 266 - 277; and the *apparent* places of the remaining 48 *circumpolar* stars on pages 278 - 290, and of the 146 *time* stars on pages 291 - 327, for every tenth transit, together with *ten times* their *daily* motion at transit. The approximate time of each transit is given in mean solar days and tenths of a day.

In the Appendix will be found Tables III., IV., and V., which give corrections of the apparent places of several circumpolar stars, and of the constants A and B, for small terms of nutation.

Solar Ephemeris.—In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the degrees and minutes being usually the same as for mean noon.

In the pages (334 - 336) of *Moon Culminations* are given the mean solar time of the upper transit of the moon's *centre* at Washington, expressed to hundredths of a minute, for convenience of taking out the moon's right ascension at this time from the Lunar Ephemeris. By means of the hourly difference given for the instant of Washington transit, the time of transit at any place within six hours of Washington in longitude may be found with sufficient accuracy by using the hourly difference interpolated for a longitude half that of the given place. The sidereal time of semidiameter passing the meridian at Washington is given in the next column. By the numbers in the fifth column are indicated the four moon-culminating stars, the two next preceding and two next following the moon, proper to be observed with the moon at each transit; the numbers are those of the stars in the list of *moon-culminating stars.* The bright limb of the moon is indicated by a Roman numeral in the last column. The right ascension of the bright limb at its transit over any meridian may be found as follows: Suppose it were required for the transit of August 8, at Upper Astoria, Oregon, in longitude,

W. from Washington $3^h\ 6^m.966 = 3^h.116 = 0^d.130$.
W. from Greenwich $8^h\ 15^m.15$.

The transit of the moon's *centre* at Upper Astoria occurs at

$$7^h\,8^m.20 + 3.116\,(1^m.942) = 7^h\,14^m.25 \text{ Upper Astoria time,}$$
$$= 15^h\,29^m.40 \text{ Greenwich time,}$$

at which time we find, on page 133,

$$\text{Moon's R. A.} = 16^h\,21^m\,53^s.91 + 29.40\,(2^s.0465) = 16^h\,22^m\,54^s.08,$$
$$\text{Approximate Dec.} = -16^\circ\,20'.$$

The above hourly motion ($1^m.942$) is found by interpolating to $0^d.065$ in advance of that given on page 335. Since the bright limb is I., the *preceding* one, the correction for time of semidiameter passing the meridian, taken from the fourth column on page 335, and interpolated to $0^d.130$ in advance, is to be *subtracted* from the right ascension of centre. This gives for the right ascension of the bright limb, at *its* transit at Upper Astoria,

$$16^h\,22^m\,54^s.08 - 64^s.09 = 16^h\,21^m\,49^s.99.$$

Moon-Culminating Stars, pp. 337 - 340. — The *mean* places, with their annual variations of 174 stars near the moon's path are given for the beginning of the fictitious year (Jan. $0^d + .109$). The names of 35 of them, whose *apparent* places are given in the Ephemeris of the *Fixed Stars* are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulas on pages 254 - 261. Thus, the approximate right ascension and declination of ν^2 Scorpii (one of the four stars corresponding to the transit of the last example), from page 339, being

$$\alpha = 16^h\,4^m\,16^s = 241^\circ\,4', \qquad \delta = -19^\circ\,7',$$

the computation of its *apparent* right ascension proceeds as follows for transit at Upper Astoria at Aug. $8^d.43$ Washington mean time. The quantities from page 258 being taken for a date $0^d.07$ previous to the midnight of August 8th, for which they are given there,

$$\begin{array}{rrrr}
G = 39^\circ\;42' & \log g = 1.1487 & \log h = 1.2920 & E = -\;0''.01 \\
G + \alpha = 280\;\;46 & \log\sin(G+\alpha) = 9.9923n & \log\sin(H+\alpha) = 9.4781 & f = +\,24.90 \\
H = 136\;\;26 & \log\tan\delta = 9.5399n & \log\sec\delta = 0.0247 & +\;\;4.80 \\
H + \alpha = 17\;\;30 & \overline{0.6809} & \overline{0.7948} & +\;\;\underline{6.23} \\
 & 4.80 & 6.23 & \alpha' - \alpha = +\,35.92
\end{array}$$

whence

$$\alpha' = 16^h\,4^m\,16^s.18 + (35''.92 = 2^s.39) = 16^h\,4^m\,18^s.57.$$

The *Ephemeris of the Moon*, which follows, and the *Moon's Phases*, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given.

The ephemerides of the two interior planets are given for mean noon and the time of transit, and those of the exterior planets for sidereal noon and the time of transit. The column "day of the month" for the exterior planets contains the mean time of sidereal noon expressed in days and tenths of a day.

The place of a planet for any number of minutes, t, from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formulas

$$\alpha = \alpha_0 + a\,t + b\,t^2,$$
$$\delta = \delta_0 + a\,t + b\,t^2,$$

α and δ denoting the right ascension and declination required, and α_0, δ_0, the right ascension and declination for the nearest noon; the logarithms of the coefficients a and b are given with the ephemeris. For an interior planet, t must be expressed in minutes of mean time; for an exterior planet, in minutes of sidereal time.

The *Solar Coördinates* are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator, at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* are referred to the mean equinox and ecliptic of the mean noon of the 2400,000th day of the Julian Period, and the dates for which they are given are counted from this epoch in mean solar days. They may be converted into days of the Julian Period by adding 2400,000. The columns $-\frac{k^2}{r^3}x$, &c. contain the quantities $-1600\,m\frac{k^2}{r^3}x$, $-1600\,m\frac{k^2}{r^3}y$, $-1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Eclipses.—The *Tables of Data* of the *Solar Eclipses* are adapted to very accurate computation by the following formulas.

$$
\begin{aligned}
\text{Let } \phi &= \text{the latitude of the place,}\\
\lambda &= \text{its western longitude from Washington,}\\
\log e &= 8.9110835,\\
\log(1-e^2) &= 9.9971066,\\
\sin\phi' &= e\sin\phi,\\
h &= \sec\phi'\cos\phi,\\
k &= (1-e^2)\sec\phi'\sin\phi,\\
a &= A - h\sin(\mu-\lambda),\\
b &= B - Ek + Gh\cos(\mu-\lambda),\\
c &= -C + Fk - Hh\cos(\mu-\lambda),\\
m &= \sqrt{bc}.
\end{aligned}
$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a. If m be not equal to a, the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t, which may be obtained in seconds by the formulas,

$$
\begin{aligned}
\log\mu' &= 1.86167,\\
\tan\tfrac{1}{2}\psi &= \frac{c}{m} = \frac{m}{b},\\
a' &= A' - \mu' h\cos(\mu-\lambda),\\
b' &= B' - \mu' Gh\sin(\mu-\lambda),\\
t &= \frac{1000000\,(m-a)}{a' + b'\cot\psi};
\end{aligned}
$$

ψ must be taken of the same sign with a, and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a.

The magnitude of the eclipse is found by taking the difference (with regard to the signs) between the value of ψ at the beginning and its value at the end of the eclipse, and if this difference is denoted by $2\,\theta$, the number of digits eclipsed is

$$12\,(1+n)\sin^2\tfrac{1}{2}\theta, \qquad \text{or, } 12\,(1+n)\cos^2\tfrac{1}{2}\theta,$$

according as θ is acute or obtuse; n is the ratio of the semidiameter of the moon to that of the sun.

The value of θ may also be obtained by the formulas

$$\tan\chi = \frac{b'}{a'}, \qquad \theta = \psi + \chi$$

(in which χ has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m - a}{a'} \cdot \frac{\cos\chi \sin\psi}{\sin\theta}.$$

The following is an example of the combutation of the beginning of the Eclipse of March 5, for the Observatory at Pulkowa.

For Pulkowa, $\phi = +\ 59^\circ\ 46'\ 18''.7$ $\qquad \lambda = 252^\circ\ 37'\ 31''.9$

$\log\sin\phi = 9.9365276$ $\qquad \log\cos\phi = 9.7019515$

$\log\sin\phi' = 8.8476111$ $\qquad \log\sec\phi' = 0.0010791$

$\log k = 9.9347133$ $\qquad \log h = 9.7030306$

A first approximation may be made from the chart, and corrected by a computation like the following. In this way we obtain 15^h 52^m Washington mean time as a near approximation to the time of the beginning of the eclipse at Pulkowa. For a nearer approximation, take from the table (p. 413) for 15^h 52^m

$A = -\ 0.62616$ $\qquad \log E = 9.997582$

$B = +\ 1.17062$ $\qquad \log F = 9.997996$

$C = +\ 0.06064$ $\qquad \log G = 9.022576\,n$

$A' = +143.40$ $\qquad \log H = 8.982098\,n$

$B' = +\ 44.06$ $\qquad \mu = 235^\circ\ 6'\ 21''.7$

Hence $\qquad \mu - \lambda = 342^\circ\ 28'\ 49''.8$

$\log\cos(\mu - \lambda) = 9.979373$ $\qquad \log\sin(\mu - \lambda) = 9.478610\,n$

$\log[h\cos(\mu - \lambda)] = 9.682404$ $\qquad \log[h\sin(\mu - \lambda)] = 9.181641\,n$

$\log[Gh\cos(\mu - \lambda)] = 8.704980\,n$ $\qquad \log[Hh\cos(\mu - \lambda)] = 8.664502\,n$

$\log(Ek) = 9.932295$ $\qquad \log(Fk) = 9.932709$

$Gh\cos(\mu - \lambda) = -0.05070$ $\qquad -Hh\cos(\mu - \lambda) = +\ 0.04619$

$-Ek = -0.85565$ $\qquad Fk = +\ 0.85646$

$B = +1.17062$ $\qquad -C = -\ 0.06064$

$b = +0.26427$ $\qquad c = +\ 0.84201$

$\log b = 9.422048$ $\qquad -h\sin(\mu - \lambda) = +\ 0.15193$

$\log c = 9.925317$ $\qquad A = -\ 0.62616$

$\log m = 9.673682$ $\qquad a = -\ 0.47423$

$\log\tan\frac{1}{2}\psi = 0.251635$ $\qquad m = -\ 0.47172$

$\psi = -121^\circ\ 29'$ $\qquad m - a = +\ 0.00251$

$\log[\mu' h\cos(\mu - \lambda)] = 1.54407$ $\qquad \log[G\mu' h\sin(\mu - \lambda)] = 0.06589$

$-\mu' h\cos(\mu - \lambda) = -\ 35.00$ $\qquad -G\mu' h\sin(\mu - \lambda) = -\ 1.16$

$a' = +108.40$ $\qquad b' = +42.90$

$a' + b'\cot\psi = +134.67$ $\qquad \log b' = 1.63246$

$\log[10^6(m - a)] = 3.3997$ $\qquad \log\cot\psi = 9.78704$

$\log(a' + b'\cot\psi) = 2.1293$ $\qquad b'\cot\psi = +\ 26.27$

$\log t = 1.2704$ $\qquad t = +\ 18.64$

	h	m	s
Approximate time	15	52	0.00
t, the correction			+18.64
Washington mean time of beginning	15	52	18.64
Pulkowa mean time of beginning	23	1	48.51

Occultations. — The pages 418 to 456, inclusive, are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon.* These elements are given for all the stars to the fifth magnitude inclusive contained in the British Association Catalogue, and for some of the sixth magnitude, which can be occulted by the moon during the year 1867.

The several columns of these pages contain, — 1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction; 8. hourly variation p' of coördinate p; 9. hourly variation q' of coördinate q; 10. logarithmic sine of the star's declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, δ, we have, at this time, $T = \delta, h = H, p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T = \delta + (t)$, $h = H +$ sidereal equivalent of (t), $p = (t)\, p'$, and $q = Y + (t)\, q$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of BESSEL, whose original paper on the subject may be found in SCHUMACHER'S *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1831, p. 257. The letters and numerals prefixed to the stars belonging to the group of the Pleiades, and the magnitudes of these stars, are taken from No. V. of BESSEL'S *Astronomische Untersuchungen.*

The process of computation is shown by the following equations: —

$d =$ Longitude for Washington, of the place, + West, — East.
$\phi =$ Geographical North Latitude of the place.
$\phi' =$ Geocentric North Latitude of the place.
$r =$ Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \qquad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of BESSEL, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log A	Log B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$
$$r \cos \phi' = B \cos \phi$$

$$a = r\cos\phi'\sin(h - d)$$
$$b = r\cos\phi'\cos(h - d)$$
$$\log\lambda = 9.4192$$

$$u = a \qquad\qquad u' = b\lambda$$
$$v = r\sin\phi'\cos D - b\sin D \qquad\qquad v' = a\lambda\sin D$$

$$m\sin M = p - u \qquad\qquad n\sin N = p' - u'$$
$$m\cos M = q - v \qquad\qquad n\cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos\psi = \frac{m\sin(M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n}\cos(M - N) \mp \frac{k\sin\psi}{n}$$

Upper signs for Immersion; under signs for Emersion.

$$c\sin C = u + t\,u'$$
$$c\cos C = v + t\,v'$$
$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - d + t$$

Angle from *North Point* $= Q$
Angle from *Vertex* $= V$

The angle ψ is to be taken out positive and less than 180°. If $\log m\sin(M - N)$ be greater than $\log k$, $\cos\psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when the $\log\cos\psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n}\cos(M - N),$$

which may give $\log m\sin(M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos\psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m\sin(M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m\sin(M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ, = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi\,(m\sin(M - N) - .2723),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180°.

The results obtained by the above equations are only approximate, yet the computed times by immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre, and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - d = h - d + \tfrac{1}{2}\mu,$$

μ being the symbol by which we express the sidereal equivalent of t in these equations.

$$u' = r \cos \phi' \lambda \cos (h' - d)$$
$$v' = r \cos \phi' \lambda \sin (h' - d) \sin \mathrm{D}.$$

Then with these values of u' and v', recompute N, n, ψ, and t, by means of

$$n \sin N = p' - u'$$
$$n \cos N = q' - v'$$
$$\cos \psi = \frac{m \sin (M - N)}{k}$$
$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - d + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$u = r \cos \phi' \sin (h - d + \mu)$$
$$v = r \sin \phi' \cos D - r \cos \phi' \sin D \cos (h - d + \mu)$$

and we should have

$$(p + t p' - u)^2 + (q + t q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been correctly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t n \sin N)^2 + (m \cos M + t n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H, Y, etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as effected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$(t) = \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)}$$
$$T - d = \text{☌} - d + (t).$$

The elements corresponding to the time $T - d$ may then be obtained as follows:

$$h - d = H - d + (\mu)$$
$$p = (t)\, p'$$
$$q = Y + (t)\, q'$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting, beforehand, all those which may be visible at his station, by observing if his latitude be included between the *limiting parallels* for any given occultation, if the time $(T - d)$ be favorable as regards the absence of daylight, and if the star's hour-angle $(h - d)$ be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T - d = \delta - d + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)}$$

for every half hour of $H - d)$ as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30°; and for all values of p', using two decimal figures, from 9.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$u = r \cos \phi' \sin (h - d)$$
$$u' = r \cos \phi' \lambda \cos (h - d)$$

which should be given for every minute (in time) of $(h - d)$, from 0^h to 6^h. If $(h - d)$ exceeds 6^h, the argument will be $12^h - (h - d)$, instead of $(h - d)$. It will be seen by the equations that u will have the same sign as $\sin (h - d)$, and that u' will have the same sign as $\cos (h - d)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30°.

For a practical application of the preceding formulæ, we will make the calculations for an occultation of the star 130 Tauri, January 17, 1867, as it will appear at the Cambridge Observatory, Mass., in north latitude $42° \; 22'.8 = \phi$, and east longitude from Washington $0^h \; 23^m \; 41^s = d$. The data for computation are given on page 415, and, with the latitude and longitude of the place, are as follows: —

January 17. 130 Tauri. 6.

	° ′		h m s		
ϕ	+42 22.8	H	—3 6 57	p'	0.6136
	h m				
d	— 0 23.7	d	—0 23 41	q'	+0.0216
δ	6 45.0	$H - d$	—2 43 16	log sin D	+9.4823
$\delta - d$	7 8.7	Y	+ 0.6109	log cos D	+9.9790

Calculation of the Time, $T - d$, and reduction of the elements of computation.

	log p'	9.788
	log sec ϕ	+0.132
log p' sec ϕ =	log (1)	+9.920
	log constant	9.403
	log cos $(H - d)$	+9.879
log [9.403] cos $(H - d)$ =	log (2)	+9.282
	(2)	+ .191
	(1)	+ .832
(1) — (2) =	(3)	+ .641
	log (3)	+9.807
	log sin $(H - d)$	—9.815
log $\frac{\sin (H - d)}{(8)}$ =	log (t)	—0.008

		h		
	(t)	— 1.0		
		h	m	s
(Reduced to hours and minutes)	(t)	— 1	0	0
Sidereal equivalent for (t)	(μ)	— 1	0	10
	$H - d$	— 2	43	16
$H - d + (\mu)$ =	$h - d$	— 3	43	26
	$\delta - d$	7	8.7	
$\delta - d + (t)$ =	$T - d$	6	8.7	
$(t)\, p'$ = — 1 × 0.6136 =	p —		.6136	
	Y +		.6109	
— 1 × 0.0216 =	$(t)\, q'$ —		.0216	
$y + (t)\, q'$ =	q +		.5893	

Calculation of the times of *Immersion* and *Emersion*, and of the *Angles of Position* of the star and moon.

(Table, page 509, Arg. ϕ)	$\log A$	9.9977
	$\log \sin \phi$	+9.8287
$\log A \sin \phi =$	$\log r \sin \phi'$	+9.8264
	$\log \cos D$	+9.9790
	$\log r \sin \phi' \cos D$	+9.8054
(Table, page 509, Arg. ϕ)	$\log B$	0.0007
	$\log \cos \phi$	+9.8684
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8691
	$\log \sin (h-d)$	−9.9178
$\log r \cos \phi' \sin (h-d) = \log u = \log a$		−9.7869
	$\log \cos (h-d)$	+9.7492
$\log r \cos \phi' \cos (h-d) =$	$\log b$	+9.6183
	$\log \lambda$	9.4192
	$\log a \lambda$	−9.2061
	$\log \sin D$	+9.4823
	$\log b \sin D$	+9.1006
$\log a \lambda \sin D =$	$\log v'$	−8 6884
$\log b \lambda =$	$\log u'$	+9.0375
	$r \sin \phi' \cos D$	+ .6389
	$b \sin D$	+ .1261
$r \sin \phi' \cos D - b \sin D =$	v	+ .5128
	q	+ .5893
$q - v =$	$m \cos M$	+ .0765
	p	− .6136
	u	− .6123
$p - u =$	$m \sin M$	− .0013
	q'	+ .0216
	v'	− .0488
$q' - v' =$	$n \cos N$	+ .0704
	p'	+ .6136
	u'	+ .1090
$p' - u' =$	$n \sin N$	+ .5046
	M	359° 2′
	N	82 3
	$M-N$	276 59
	$90° - N$	7 57
	ψ	106 12
For Immersion, $90° - N - \psi =$	Q	261 45

	$\log m \sin M$	−7.1139
	$\log m \cos M$	+8.8837
	$\log \tan M$	−8.2302
	$\log \cos M$	+9.9999
	$\log m$	+8.8838
	$\log n \sin N$	+9.7030
	$\log n \cos N$	+8.8476
	$\log \tan N$	+0.8554
	$\log \sin N$	+9.9958
	$\log n$	+9.7072
	$-\log \frac{m}{n}$	−9.1766
	$\log \cos (M-N)$	+9.0849
$-\log \frac{m}{n} \cos (M-N) =$	$\log (1)$	−8.2615
	$\log \sin (M-N)$	−9.9968
	$\log m \sin (M-N)$	−8.8806
	$\log k$	9.4350
$\log \frac{m \sin (M-N)}{k}$	$\log \cos \psi$	−9.4456
	$\log \sin \psi$	+9.9824
	$\log k \sin \psi$	+9.4174
	$\log (2)$	+9.7102
	(1)	− .0183
	(2)	+ .5131
For Immersion, (1) − (2) =	t_1	− .5314
For Emersion, (1) + (2) =	t_2	+ .4948
	$\log t_1$	−9.7254
	$\log u'$	+9.0375
	$\log t_1 u'$	−8.7629
	$\log v'$	−8.6884
	$\log t_1 v'$	+8.4138
	$t_1 v'$	+ .0259
	v	+ .5128
$v + t_1 v' =$	$c \cos C$	+ .5387
	$t_1 u'$	− .0579
	u	− .6123
$u + t_1 u' =$	$c \sin C$	− .6702
	$\log c \sin C$	−9.8262
	$\log c \cos C$	+9.7314
	$\log \tan C$	−9.0948

		h	m
	$T-d$	6	8.7
(Reduced to hours and minutes,)	t_1	− 0	31.9
IMMERSION: *Cambridge Mean Time*	$T-d+t_1$	5	36.8
		°	′
	C	− 51	12
Immersion *Angle from North Point* = ...	Q	261	45
Immersion *Angle from Vertex* = $Q + C$ = ...	V	210	33
		h	m
(Reduced to hours and minutes,)	t_2	+ 0	29.7
EMERSION: *Observatory Mean Time*.	$T-d+t_2$	6	38.4

Calculation of a more accurate time, etc., of *Emersion*.

		h m s
	$h-d$	—3 43 26
. Sidereal equiv. for $\frac{1}{2}t_2$ =	$\frac{1}{2}\mu$ +	14 50
$h-d+\frac{1}{2}\mu$ =	$h'-d$	—3 28 36
	$\log\cos(h'-d)$	+9.7879
	$\log r\cos\phi'$	+9.8691
	$\log\lambda$	9.4192
$\log r\cos\phi'\lambda\cos(h'-d)$ =	$\log u'$	+9.0762
	$\log\sin(h'-d)$	—9.8974
	$\log r\cos\phi'\lambda$	+9.2883
	$\log\sin D$	—9.4823
$\log r\cos\phi'\lambda\sin(h'-d)\sin D$ =	$\log v'$	—8.6680
	v'	— .0466
	q'	+ .0216
$q'-v'$ =	$n\cos N$	— .0682
	u'	+ .1192
	p'	+ .6136
$p'-u'$ =	$n\sin N$	+ .4944
	$\log n\sin N$	+9.6941
	$\log n\cos N$	+8.8338
	$\log\tan N$	+0.8603
	$\log\sin N$	+9.9959
	$\log n$	+9.6982
From first determination,	$\log m$	+8.8838
	$-\log\frac{m}{n}$	—9.1856
	$\log\cos(M-N)$	+9.0786
	$\log\sin(M-N)$	—9.9969
	$\log m\sin(M-N)$	—8.8807
	$\log k$	9.4350
	$\log\cos\psi$	—9.4457
	$\log\sin\psi$	+9.9824
	$\log k\sin\psi$	+9.4174
$\log\frac{k\sin\psi}{n}$ =	$\log(2)$	+9.7192
$-\log\frac{m}{n}\cos(M-N)$ =	$\log(1)$	—8.2642

		° ′
From first determination,	M	359 2
	N	82 9
	$M-N$	276 53
	$90°-N$	7 51
	ψ	106 12
For Emersion, $90°-N+\psi$ =	Q	114 3
	(1)	— .0184
	(2)	+ .5238
(1) + (2) =	t	+ .5054
	$\log t$	+9.7036
	$\log n\sin N$	+9.6941
	$\log n\,t\sin N$	+9.3977
	$\log n\cos N$	+8.8338
	$\log n\,t\cos N$	+8.5374
	$n\,t\cos N$	+ .0345
From first determination,	$m\cos M$	+ .0765
$m\cos M+n\,t\cos N$ =	(3)	+ .1110
	$n\,t\sin N$	+ .2498
From first determination,	$m\sin M$	— .0013
$m\sin M+n\,t\sin N$ =	(4)	.2485
	$(4)^2$	.0618
	$(3)^2$	.0123
$(3)^2+(4)^2=k^2=0.0741$,	Check	.0741
	$\log u'$	+9.0762
	$\log t\,u'$	+8.7798
	$\log v'$	—8.6680
	$\log t\,v'$	—8.3716
	$t\,v'$	— .0235
From first determination,	v	+ .5128
$v+t\,v'$ =	$c\cos C$	+ .4893
	$t\,u'$	+ .0602
From first determination,	u	— .6123
$u+t\,u'$ =	$c\sin C$	— .5521
	$\log c\sin C$	—9.7420
	$\log c\cos C$	+9.6896
	$\log\tan C$	—0.0521

		h m
	$T-d$	6 8.7
(Reduced to hours and minutes,)	t +	30.3
EMERSION: *Observatory Mean Time*	$T-d+t$	6 39.0

		° ′
	C —	48 27
Emersion *Angle from North Point* = ...	Q	114 3
Emersion *Angle from Vertex* = $Q+C$ = ...	V	65 36

The last three pages of the Occultations contain a list of such occultations and near approaches as will be visible at Washington during the year 1867. For the latter, the time of nearest approach is given, followed by the distance of the star from the moon's limb at this time.

In the Appendix will be found a list of occultations visible between 30° and 45° north latitude and $1^h\ 30^m$ and 3^h longitude west from Washington, predicted by means of the instrument invented by Rev. THOMAS HILL. The times of immersion and emersion, in Washington mean time, and the angle from the vertex are given for every 5° of latitude and every 30^m of longitude between the above limits, and can easily be found by interpolation for any intermediate points.

This list gives most of the occultations, but not *every* occultation, visible at any given place within the above limits.

The Tables of *Jupiter's Satellites* embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangular coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

x is positive after superior conjunction, or on the east side of the planet; negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a W. placed after the name of the phase.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1867.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:—

$$\text{Precession}^{*} = 50''.2411 + 0''.0002268\,t,$$
$$\text{Obliquity}^{\dagger} = 23^\circ\ 27'\ 54''.22 - 0''.4645\,t - 0''.0000014\,t^2,$$
$$\text{Aberration}^{\ddagger} = 20''.4451 \pm 0''.0111,$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulas given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, of the Moon, and of the Planets, the obliquity of the ecliptic of HANSEN'S *Tables of the Sun* has been used; no reduction for the difference, 0''.37, by which HANSEN'S exceeds PETERS' obliquity having been made in this volume.

The General Constants for Star Reduction are computed from tables adapted to the formulas given on page 261.

The Mean Places of 48 Northern Circumpolar Stars, and the Mean Right Ascension of 128 "Time Stars," have been taken from the *Standard Mean Right Ascensions of Circumpolar and Time Stars, prepared for the use of the U. S. Coast Survey* by Dr. B. A. GOULD. Washington, 1862. The Mean Places of 4 Southern Circumpolar Stars are from the Mean Places of "100 Principal Fixed Stars for Jan. 1, 1840," printed in the *British Nautical Almanac* for 1848. The Mean Declinations of the "Time Stars" have been derived from the Mean Declinations for the beginning of the year 1865, the authorities for which may be found by reference to the Appendix to the *American Ephemeris and Nautical Almanac* for 1865.

In the Nomenclature of the Fixed Stars, (H.) signifies that the star is denoted by HEVELIUS' number, (B.) that the notation of BODE is used. Duplicate notations have been added where it would facilitate reference to ARGELANDER'S *Uranometria Nova.* "Groombridge 2320" is the star 87 (B.) Draconis, and "12 Year Cat. 1879" is the last star in Draco in the *Uranometria Nova.*

The magnitudes, except of stars south of — 40° dec., are ARGELANDER'S.

The reductions from the Mean to the Apparent Places of the Circumpolar Stars have been

---

[*] PETERS' *Numerus Constans Nutationis*, p. 71.

[†] Ibid., pp. 66 and 71.

[‡] STRUVE'S *Constant de l'Aberration*, p. 47.

computed by the first set of formulas given on p. 261, using, for the Northern stars, the values of a, b c, d derived from the *Standard Mean Right Ascensions*, &c. The terms

$$-\ 0.00405\ a\ \sin 2\ ☾ - 0''.0886\ b\ \cos 2\ ☾ \text{ for the R. A.}$$
$$-\ 0.00405\ a'\ \sin 2\ ☾ - 0''.0886\ b'\ \cos 2\ ☾ \text{ for the Dec.}$$

have been applied to the places of α, ϵ, δ, and λ Ursæ Minoris; in which a, a', b, b', are defined on p. 261; and ☾ denotes the moon's *mean* longitude. The Table on p. 14 of the Appendix contains the values of these terms for seven stars, computed for 1870.0. The reductions of 44 stars have been taken directly from WOLFERS' *Tabulæ Reductionum*, including the addition to the mean right ascension of Sirius of the term given by PETERS,*

$$q = 0^{s}.127 + 0^{s}.00050\ (t - 1800) + 0^{s}.171 \sin\ (u + 77^{\circ}\ 44'),$$

in which u, the eccentric anomaly from the inferior apsis, is found by the formula

$$u - e \sin u = n\ (t - T),$$

from the elements

$T =$ Passage through the inferior apsis 1791.431
$n =$ Mean annual motion in orbit $7^{\circ}.1865$
Period of revolution $50^{y}.093$
$e =$ Eccentricity 0.7994

The reductions of the remaining 106 stars have been taken from Tables, similar to those of WOLFERS, now in course of preparation, and representing the same terms of BESSEL'S formulas (with PETERS' coefficients) as those given on p. 261, omitting the two small terms in the value of E.

The Mean Places of the Moon-culminating Stars have been taken from the *Almanac Catalogue of Zodiacal Stars, printed for the use of the American Ephemeris and Nautical Almanac*, Bureau of Navigation, Washington, 1864.

The Ephemeris of the Sun is constructed from the Tables of HANSEN and OLUFSEN, Copenhagen, 1853. In the computation of the Sun's Geocentric Coördinates, regard has been had to the sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac* for 1855.

ENCKE'S discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von* 1769, &c., has furnished the standard

Equatorial Horizontal Parallax at the Earth's Mean Distance $= 8''.5776$.

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to 16′ 2″.

The Ephemeris of the Moon has been constructed from PEIRCE'S *Tables of the Moon*, with the *Tables of the Moon's Parallax*, constructed from WALKER'S and ADAMS' formulas, and arranged as a supplement to the first edition of PEIRCE'S *Tables of the Moon.*

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{500}$ part greater than that given by BURCKHARDT, although that given by BURCKHARDT is probably better adapted to the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. WINLOCK, which are based on the theory of LE VERRIER, published in the Additions to the *Connaissance des Temps* for 1848.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from LINDENAU'S Tables, in a form similar to that adopted for the Lunar Tables: applying AIRY'S

---

* *Astronomische Nachrichten*, Nr. 748, "Elemente V."

Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. HUGH BREEN's results contained in his paper on the *Corrections of* LINDENAU'S *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from LE VERRIER'S *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0.

$$
\begin{aligned}
L &= 289^\circ\ 51'\ 58''.5 \\
\pi &= 129\ \ 32\ \ 59.6 + 49''.57459\,t. \\
\text{☊} &= 75\ \ 23\ \ 27.3 + 32.88424\,t. \\
i &= 8\ \ 23\ \ 34.6 + \ \ 0.04363\,t. \\
e &= 1410''.6847 - \ \ 0.11157\,t. \\
n &= 2106641.438 \\
a &= 0.7233323
\end{aligned}
$$

The Ephemeris of Mars is derived from manuscript Tables constructed from LINDENAU'S Tables in the same manner as the Tables of Venus. Mr. HUGH BREEN'S results contained in his paper *On the Corrections of* LINDENAU'S *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and LE VERRIER'S secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and secular variations for Washington, 1855.0.

$$
\begin{aligned}
L &= 320^\circ\ 13'\ 33''.71 \\
\pi &= 333\ \ 23\ \ 17.80 + 65''.99145\,t. \\
\text{☊} &= 48\ \ 25\ \ 55.18 + 27.68294\,t. \\
i &= 1\ \ 51\ \ \ 2.20 - \ \ 0.02141\,t. \\
e &= 19238''.75 \ \ + \ \ 0.18549\,t. \\
n &= 689050.9023 \\
a &= \ \ 1.5236878
\end{aligned}
$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of BOUVARD, with changes having the same object. The mass of Jupiter given by BESSEL has been adopted and used.

This mass $= \dfrac{1}{1047.879 \pm 0.235}$ of the sun's mass.

The following corrections of the elements have also been introduced for 1865: —

corr. mean long. $= +4''.9$
corr. long. of node $= -143''.4$
corr. inclination $= -5''.7$.

The Ephemeris of Uranus is derived from the elliptical portion of BOUVARD'S Tables, with LE VERRIER'S corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel (dite Uranus)*, published in the *Connaissance des Temps* for 1849, and also PEIRCE'S corrections and perturbations arising from the influence of Neptune.

The combined corrections of the elements deduced by PEIRCE for January 1, 1800, are as follows: —

APPENDIX.

corr. mean distance = + 0.000942
corr. mean motion = — 1″.13560
corr. eccentricity = — 0.0003626
corr. long. of per. = + 8252″.4
corr. long. of epoch = + 2575″.4

The Ephemeris of Neptune is derived from Peirce's theory and Walker's orbit.

The eclipses and elongations of Jupiter's Satellites are computed from Damoiseau's Tables.

The semidiameters of the Planets are computed from the following values: —

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by the constant quantity, 0″.57.

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The elements of the eclipse are adapted to the modification of Bessel's formulas, suggested by T. Henry Safford, Jr. The formulas are to be found in Peirce's Spherical Astronomy.

The elements adapted to Bessel's formulas are given for all occultations of stars greater than those of the sixth magnitude.

The Heliocentric Coördinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity: —

Mercury	$\frac{1}{4865751}$	Encke, *A. N.*, No. 443.
Venus	$\frac{1}{390000}$	Le Verrier, *Théor. de Merc.*, p. 115.
The Earth	$\frac{1}{354936}$	Le Verrier, *Théor. de Merc.*, p. 26.
Mars	$\frac{1}{2680637}$	Burckhardt, *Conn. des Temps*, 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.235}$	Bessel, *Die Masse des Jupiter*, p. 64.
Saturn	$\frac{1}{3501.6}$	Bessel, *Comptes Rendus*, 1841.
Uranus	$\frac{1}{24905}$	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune	$\frac{1}{18780}$	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the electrotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

CONSTRUCTION OF THE ALMANAC.

The principal computations of the Ephemeris have been distributed in the following manner: —

The Sun has been computed by Mr. **Eastwood**; the Ephemeris of the Moon, by Mr. **Ferrel** and Professor **Runkle**; and the Lunar Distances, by Mr. **Ferrel** and Mr. **Loomis**. Mercury has been computed by Mr. **Bradford** and Professor **Van Vleck**, Venus by Miss **Mitchell**, Mars by Mr. **Eastwood**, Jupiter by Professor **Kendall**, Saturn by Professor **Van Vleck**, Uranus by Mr. **Ferrel**, and Neptune by Professor **Kendall**. The Fixed Stars and the General Constants for Reduction have been computed by Mr. **Bartlett** and Mr. **Hill**, and the Occultations by Mr. **Downes**. The Eclipses have been computed and the Charts projected by Mr. **Wright**.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.

☊ — λ	Δ λ	a^{-1}	B	☊ — λ	☊ — λ	Δ λ	a^{-1}	B	☊ — λ
°			° '	°	°	'		° '	°
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15 3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0 4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0 0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δλ has the sign of tan. (λ — ☊)
a has the sign of cos. (☊ — λ)
B has the sign of sin. (☊ — λ)

When ☊ — λ exceeds 180° the table is to be entered with (☊ — λ) — 180° as the argument in the column ☊ — λ.

TABLE.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

		Difference of the Proportional Logarithms in the Ephemeris.																								
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

		Difference of the Proportional Logarithms in the Ephemeris.																	
		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Side-real.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s	m. s.	m. s.	m. s	s.	s.
0	0 00.000	0 09.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 08.807		
1	0 00.164	0 09.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 08.971	1	0.003
2	0 00.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 09.135	2	.005
3	0 00.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 09.298	3	.008
4	0 00.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 09.462	4	.011
5	0 00.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 09.626	5	.014
6	0 00.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 09.790	6	.016
7	0 01.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 00.124	1 09.954	7	.019
8	0 01.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 00.288	1 10.118	8	.022
9	0 01.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 00.452	1 10.281	9	.025
10	0 01.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 00.616	1 10.445	10	.027
11	0 01.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 00.779	1 10.609	11	.030
12	0 01.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 00.943	1 10.773	12	.033
13	0 02.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 01.107	1 10.937	13	.035
14	0 02.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 01.271	1 11.100	14	.038
15	0 02.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 01.435	1 11.264	15	.041
16	0 02.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 01.599	1 11.428	16	.044
17	0 02.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 01.762	1 11.592	17	.046
18	0 02.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 01.926	1 11.756	18	.049
19	0 03.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 02.090	1 11.920	19	.052
20	0 03.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 02.254	1 12.083	20	.055
21	0 03.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 02.418	1 12.247	21	.057
22	0 03.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 02.582	1 12.411	22	.060
23	0 03.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 02.745	1 12.575	23	.063
24	0 03.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 02.909	1 12.739	24	.066
25	0 04.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 03.073	1 12.903	25	.068
26	0 04.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 03.237	1 13.066	26	.071
27	0 04.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 03.401	1 13.230	27	.074
28	0 04.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 03.564	1 13.394	28	.076
29	0 04.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 03.728	1 13.558	29	.079
30	0 04.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 03.892	1 13.722	30	.082
31	0 05.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 04.056	1 13.886	31	.085
32	0 05.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 04.220	1 14.049	32	.087
33	0 05.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 04.384	1 14.213	33	.090
34	0 05.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 04.547	1 14.377	34	.093
35	0 05.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 04.711	1 14.541	35	.096
36	0 05.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 04.875	1 14.705	36	.098
37	0 06.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 05.039	1 14.868	37	.101
38	0 06.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 05.203	1 15.032	38	.104
39	0 06.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 05.367	1 15.196	39	.106
40	0 06.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 05.530	1 15.360	40	.109
41	0 06.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 05.694	1 15.524	41	.112
42	0 06.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 05.858	1 15.688	42	.115
43	0 07.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 06.022	1 15.851	43	.117
44	0 07.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 06.186	1 16.015	44	.120
45	0 07.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 06.350	1 16.179	45	.123
46	0 07.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 06.513	1 16.343	46	.126
47	0 07.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 06.677	1 16.507	47	.128
48	0 07.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 06.841	1 16.671	48	.131
49	0 08.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 07.005	1 16.834	49	.134
50	0 08.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 07.169	1 16.998	50	.137
51	0 08.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 07.332	1 17.162	51	.139
52	0 08.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 07.496	1 17.326	52	.142
53	0 08.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 07.660	1 17.490	53	.145
54	0 08.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 07.824	1 17.654	54	.147
55	0 09.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 07.988	1 17.817	55	.150
56	0 09.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 08.152	1 17.981	56	.153
57	0 09.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 08.315	1 18.145	57	.156
58	0 09.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 08.479	1 18.309	58	.158
59	0 09.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 08.643	1 18.473	59	.161

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 07.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 07.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 08.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 08.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 08.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 08.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 08.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 08.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 09.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 09.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 09.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 09.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 09.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 00.084	2 09.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 00.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 00.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 00.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 00.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 00.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 01.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 01.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 01.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22 241	1 32.070	1 41.900	1 51.729	2 01.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 01.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 01.887	2 11.716	2 21.546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 02.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 02.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 02.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 02.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 02.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 02.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 03.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 03.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 03.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 03.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 03.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 03.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 04.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 04.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 04.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 04.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 04.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 04.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 04.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 05.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 05.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 05.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 05.655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 05.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 05.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 06.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 06.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 06.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 06.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 06.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 06.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 07.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 07.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 07.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 07.620	2 17.450	2 27.280	2 37.109	59	.161

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50 995	30	.082
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32 155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33 793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	.161

TABLE II. MEAN SOLAR INTO SIDEREAL TIME

Mean Solar.	0^{h}	1^{h}	2^{h}	3^{h}	4^{h}	5^{h}	6^{h}	7^{h}	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	0 00.000	0 09.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 08.995		
1	0 00.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 09.160	1	0.003
2	0 00.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 09.324	2	.005
3	0 00.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 09.488	3	.008
4	0 00.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 09.652	4	.011
5	0 00.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 09.817	5	.014
6	0 00.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 00.124	1 09.981	6	.016
7	0 01.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 00.289	1 10.145	7	.019
8	0 01.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 00.453	1 10.310	8	.022
9	0 01.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 00.617	1 10.474	9	.025
10	0 01.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 00.782	1 10.638	10	.027
11	0 01.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 00.946	1 10.802	11	.030
12	0 01.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 01.110	1 10.967	12	.033
13	0 02.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 01.274	1 11.131	13	.036
14	0 02.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 01.439	1 11.295	14	.038
15	0 02.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 01.603	1 11.459	15	.041
16	0 02.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 01.767	1 11.624	16	.044
17	0 02.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 01.932	1 11.788	17	.047
18	0 02.937	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 02.096	1 11.952	18	.049
19	0 03.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 02.260	1 12.117	19	.052
20	0 03.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 02.424	1 12.281	20	.055
21	0 03.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 02.589	1 12.445	21	.057
22	0 03.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 02.753	1 12.609	22	.060
23	0 03.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 02.917	1 12.774	23	.063
24	0 03.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 03.081	1 12.938	24	.066
25	0 04.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 03.246	1 13.102	25	.068
26	0 04.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 03.410	1 13.266	26	.071
27	0 04.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 03.574	1 13.431	27	.074
28	0 04.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 03.739	1 13.595	28	.077
29	0 04.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 03.903	1 13.759	29	.079
30	0 04.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 04.067	1 13.924	30	.082
31	0 05.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 04.231	1 14.088	31	.085
32	0 05.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 04.396	1 14.252	32	.088
33	0 05.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 04.560	1 14.416	33	.090
34	0 05.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 04.724	1 14.581	34	.093
35	0 05.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 04.888	1 14.745	35	.096
36	0 05.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 05.053	1 14.909	36	.099
37	0 06.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 05.217	1 15.073	37	.101
38	0 06.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 05.381	1 15.238	38	.104
39	0 06.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 05.546	1 15.402	39	.107
40	0 06.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 05.710	1 15.566	40	.110
41	0 06.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 05.874	1 15.731	41	.112
42	0 06.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 06.038	1 15.895	42	.115
43	0 07.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 06.203	1 16.059	43	.118
44	0 07.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 06.367	1 16.223	44	.120
45	0 07.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 06.531	1 16.388	45	.123
46	0 07.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 06.695	1 16.552	46	.126
47	0 07.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 06.860	1 16.716	47	.129
48	0 07.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 07.024	1 16.881	48	.131
49	0 08.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 07.188	1 17.045	49	.134
50	0 08.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 07.353	1 17.209	50	.137
51	0 08.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 07.517	1 17.373	51	.140
52	0 08.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 07.681	1 17.538	52	.142
53	0 08.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 07.845	1 17.702	53	.145
54	0 08.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 08.010	1 17.866	54	.148
55	0 09.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 08.174	1 18.030	55	.151
56	0 09.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 08.338	1 18.195	56	.153
57	0 09.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 08.502	1 18.359	57	.156
58	0 09.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 08.667	1 18.523	58	.159
59	0 09.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 08.831	1 18.688	59	.162

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 08.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 09.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 01.892	2 11 748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 05.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06 327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	52	142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 07.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	59	.162

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	2 37.704	2 47.560	2 57.417	3 07.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 07.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 07.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 07.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 07.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 08.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 08.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 08.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 08.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 08.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 08.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 09.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 09.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 09.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 09.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 09.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 00.045	3 09.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 00.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 00.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 00.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 00.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 00.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 01.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 01.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 01.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 01.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 01.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 01.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 02.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 02.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 02.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 02.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 02.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 02.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 03.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 03.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 03.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 03.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 03.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 03.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 03.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 04.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 04.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 04.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 04.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 04.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 04.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 05.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 05.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 05.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 05.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 05.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 05.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 06.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 06.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 06.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 06.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 06.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 06.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 07.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	.162

TABLE III.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2 ☾ IN NUTATION.

☾ or ☽ —180°	α Urs. Min.		51 Cephei.		32 Camelop.		ε Urs. Min.		δ Urs. Min.		λ Urs. Min.		σ Octantis.		☾ or ☽ —180°
	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
°	s	″	s	″	s	″	s	″	s	″	s	″	s	″	°
0	−.233	+.03	+.021	+.09	+.056	−.02	+.011	−.09	−.006	−.09	−.150	−.08	+.013	−.09	90
2	.238	.02	.012	.09	.056	.01	.013	.08	−.001	.09	.133	.08	−.018	.09	92
4	.242	.02	+.003	.09	.055	−.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	−.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	−.246	.00	−.023	+.09	+.052	+.01	+.019	−.07	+.021	−.08	−.059	−.09	−.139	−.08	100
12	.246	−.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	−.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	−.230	−.03	−.063	+.08	+.042	+.04	+.025	−.05	+.046	−.07	+.039	−.08	−.275	−.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.360	.05	118
30	−.187	−.05	−.096	+.06	+.027	+.06	+.028	−.02	+.065	−.05	+.133	−.07	−.377	−.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.392	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.406	.03	124
36	.149	.07	.111	.04	.016	.07	.028	−.01	.073	.03	.182	.06	.417	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	−.120	−.07	−.118	+.03	+.008	+.07	+.028	+.01	+.077	−.02	+.210	−.05	−.434	−.02	130
42	.105	07	.120	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	.000	.08	.026	.02	.079	−.01	.235	.04	.442	−.01	134
46	.073	.08	.124	+.01	−.004	.08	.026	.02	.079	.00	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	−.039	−.08	−.125	.00	−.011	+.08	+.024	+.04	+.079	+.01	+.262	−.02	−.438	+.01	140
52	.022	.08	.125	−.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	−.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.425	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	−.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	−.08	−.117	−.03	−.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	−.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	−.07	−.095	−.06	−.044	+.06	+.008	+.08	+.055	+.06	+.269	+.03	−.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.263	.04	.271	.07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	−.05	−.062	−.08	−.053	+.04	−.002	+.09	+.033	+.08	+.223	+.06	−.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.106	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	−.03	−.021	−.09	−.056	+.02	−.011	+.09	+.006	+.09	+.150	+.08	−.013	+.09	180

NOTE.—When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.
The Moon's Mean Longitude, ☾, may be found on page 340.

TABLE IV.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS *A* AND *B* WHICH DEPEND ON THE ARGUMENT 2☾, IN UNITS OF THE FIFTH DECIMAL FOR *A*, AND OF THE FOURTH FOR *B*.

☾ or ☾ −180°.	*A.*	*B.*	☾ or ☾ −180°.	*A.*	*B.*	☾ or ☾ −180°.	*A.*	*B.*	☾ or ☾ −180°.	*A.*	*B.*
0°	− 0	−886	45°	−405	+ 0	90°	+ 0	+886	135°	+405	− 0
1	14	885	46	405	31	91	14	885	136	405	31
2	29	883	47	404	61	92	29	883	137	404	61
3	42	881	48	403	93	93	42	881	138	403	93
4	56	877	49	401	124	94	56	877	139	401	124
5	− 70	−872	50	−399	+153	95	+ 70	+872	140	+399	−153
6	84	866	51	396	184	96	84	866	141	396	184
7	98	859	52	393	215	97	98	859	142	393	215
8	112	851	53	389	244	98	112	851	143	389	244
9	125	843	54	385	274	99	125	843	144	385	274
10	−138	−833	55	−380	+303	100	+138	+833	145	+380	−303
11	152	821	56	375	331	101	152	821	146	375	331
12	165	809	57	370	360	102	165	809	147	370	360
13	178	796	58	364	388	103	178	796	148	364	388
14	190	782	59	358	415	104	190	782	149	358	415
15	−202	−767	60	−351	+443	105	+202	+767	150	+351	−443
16	214	751	61	344	470	106	214	751	151	344	470
17	226	734	62	336	495	107	226	734	152	336	495
18	238	716	63	328	520	108	238	716	153	328	520
19	249	698	64	319	545	109	249	698	154	319	545
20	−261	−678	65	−310	+570	110	+261	+678	155	+310	−570
21	271	659	66	301	592	111	271	659	156	301	592
22	282	637	67	291	615	112	282	637	157	291	615
23	291	615	68	282	637	113	291	615	158	282	637
24	301	592	69	271	659	114	301	592	159	271	659
25	−310	−570	70	−261	+678	115	+310	+570	160	+261	−678
26	319	545	71	249	698	116	319	545	161	249	698
27	328	520	72	238	716	117	328	520	162	238	716
28	336	495	73	226	734	118	336	495	163	226	734
29	344	470	74	214	751	119	344	470	164	214	751
30	−351	−443	75	−202	+767	120	+351	+443	165	+202	−767
31	358	415	76	190	782	121	358	415	166	190	782
32	364	388	77	178	796	122	364	388	167	178	796
33	370	360	78	165	809	123	370	360	168	165	809
34	375	331	79	152	821	124	375	331	169	152	821
35	−380	−303	80	−138	+833	125	+380	+303	170	+138	−833
36	385	274	81	125	843	126	385	274	171	125	843
37	389	244	82	112	851	127	389	244	172	112	851
38	393	215	83	98	859	128	393	215	173	98	859
39	396	184	84	84	866	129	396	184	174	84	866
40	−399	−153	85	− 70	+872	130	+399	+153	175	+ 70	−872
41	401	124	86	56	877	131	401	124	176	56	877
42	403	93	87	42	881	132	403	93	177	42	881
43	404	61	88	29	883	133	404	61	178	29	883
44	405	31	89	14	885	134	405	31	179	14	885
45	−405	− 0	90	− 0	+886	135	+405	+ 0	180	+ 0	−886

NOTE.—The Moon's Mean Longitude ☾, may be found on page 345.

TABLE V.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS *A* AND *B* DEPENDING ON THE SMALL TERMS OF THE NUTATION, IN UNITS OF THE FIFTH DECIMAL FOR *A*, AND OF THE FOURTH FOR *B*.

Arg.	☾ − Γ′.	2☉ − 2Γ′.	2☉ − 2☊.	2☉ − ☊.		2Γ′ − ☊.		Γ′.		3☉ − Γ.	
	A.	*A.*	*A.*	*A.*	*B.*	*A.*	*B.*	*A.*	*B.*	*A.*	*B.*
0°	+ 0	+ 0	−0	+ 0	+67	+0	+24	+5	+ 8	−11	− 5
10	23	2	1	4	66	2	24	6	+ 4	10	+ 9
20	46	3	2	9	63	3	23	7	− 2	7	21
30	68	5	2	12	58	4	21	8	8	− 2	27
40	87	6	3	16	51	6	18	8	13	+ 4	25
50	+103	+ 8	−4	+19	+43	+7	+15	+7	−19	+ 8	+17
60	117	9	4	22	34	8	12	6	24	11	+ 5
70	127	9	4	24	23	8	8	4	28	10	− 9
80	133	10	5	25	+12	9	+ 4	+2	30	7	21
90	135	10	5	25	0	9	0	0	31	+ 2	27
100	+133	+10	−5	+25	−12	+9	− 4	−2	−30	− 4	−25
110	127	9	5	24	23	8	8	4	28	8	17
120	117	9	4	22	34	8	12	6	24	11	− 5
130	103	8	4	19	43	7	15	7	19	10	+ 9
140	87	6	3	16	51	6	18	8	13	7	21
150	+ 68	+ 5	−2	+12	−58	+4	−21	−8	− 8	− 2	+27
160	46	3	2	9	63	3	23	7	− 2	+ 4	25
170	+ 23	+ 2	−1	+ 4	66	+2	24	6	+ 4	8	17
180	0	0	0	0	67	0	24	5	8	11	+ 5
190	− 23	− 2	+1	− 4	66	−2	24	4	12	10	− 9
200	− 46	− 3	+2	− 9	−63	−3	−23	−2	+14	+ 7	−21
210	68	5	2	12	58	4	21	−1	16	+ 2	27
220	87	6	3	16	51	6	18	0	16	− 4	25
230	103	8	4	19	43	7	15	+1	16	8	17
240	117	9	4	22	34	8	12	1	16	11	− 5
250	−127	− 9	+5	−24	−23	−8	− 8	+1	+16	−10	+ 9
260	133	10	5	25	−12	9	− 4	0	15	7	21
270	135	10	5	25	0	9	0	0	15	− 2	27
280	133	10	5	25	+12	9	+ 4	0	15	+ 4	25
290	127	9	5	24	23	8	8	−1	16	8	17
300	−117	− 9	+4	−22	+34	−8	+12	−1	+16	+11	+ 5
310	103	8	4	19	43	7	15	−1	16	10	− 9
320	87	6	3	16	51	6	18	0	16	7	21
330	68	5	2	12	58	4	21	+1	16	+ 2	27
340	46	3	2	9	63	3	23	2	14	− 4	25
350	− 23	− 2	+1	− 4	+66	−2	+24	+4	+12	− 8	−17
360	− 0	− 0	+0	− 0	+67	−0	+24	+5	+ 8	−11	− 5

Year.	☾ − Γ′.	2☉ − 2Γ′.	2☉ − 2☊.	2☉ − ☊.	2Γ′ − ☊.	Γ′.	3☉ − Γ.
1865	335°.6	221°.2	129°.7	345°.6	124°.5	350°.3	202°.0
1866	64.4	139.3	167.8	4.5	225.2	31.0	201.3
1867	153.1	57.5	206.0	23.4	325.9	71.7	200.6
1868	254.9	337.4	246.3	44.3	66.8	112.4	202.9
1869	343.6	255.6	284.5	62.2	167.5	153.1	202.2
1870	72.3	173.8	322.7	81.1	268.2	193.7	201.5
1871	161.0	91.9	0.9	100.0	8.9	234.4	200.9
1872	262.8	11.8	41.2	121.0	109.8	275.2	203.1
1873	351.5	290.0	79.4	139.9	210.5	315.8	202.5
1874	80.3	208.2	117.7	158.8	311.2	356.5	201.8
Daily Motion.	13°.065	1°.749	2°.007	2°.024	0°.276	0°.111	2°.957

NOTE. — The arguments given above are for Jan. 0.5 in common years, but for Jan. 1.5 in leap years.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
Jan. 2	α Cancri 4	30	20 29	20 25	20 19	20 13	21 25	21 26	21 24	21 21	115	123	131	135
		35	20 23	20 19	20 13	20 3	21 15	21 16	21 15	21 12	98	105	113	107
		40	20 20	20 15	20 7	19 56	21 4	21 5	21 5	21 3	80	86	95	93
		45	20 18	20 10	20 1	19 52	20 52	20 53	20 53	20 52	63	71	76	85
5	76 Leonis 6	30	13 39	13 32	13 28	13 27	14 53	14 43	14 35	14 29	359	2	5	4
		35	13 48	13 40	13 33	13 31	14 46	14 39	14 33	14 28	344	347	350	350
		40	14 1	13 49	13 44	13 41	14 35	14 31	14 27	14 23	326	329	331	332
		45	14 22	....	....	14 17	Star 2′	33″ N.	Star	42″ N.	...	...	...	...
12	29 Ophiuchi 6	30	18 45	18 38	*18 33	....	19 48	19 42	19 37	19 34	1	6	10	16
		35	18 6	18 46	*18 40	....	19 42	19 40	19 37	19 35	345	353	359	5
		40	19 30	19 0	*18 50	*18 47	19 30	19 33	19 35	19 35	322	335	346	352
		45	....	....	*19 10	*18 59	....	....	19 25	*19 32	...	...	320	338
25	δ^2 Tauri 6	30	8 54	8 36	8 24	8 13	10 27	10 3	9 44	9 27	146	100	55	30
		35	9 0	8 45	8 34	8 26	10 18	10 3	9 42	9 26	111	84	47	20
		40	9 9	8 57	8 49	8 45	10 13	9 57	9 38	9 17	83	69	28	359
		45	9 26	9 20	9 18	....	9 59	9 41	9 20	....	48	20	...	...
25	8249 Lal. 7½	30	....	....	....	8 37	....	....	....	8 49	...	...	...	128
		35	....	9 14	8 44	8 24	....	9 32	9 27	9 16	...	162	129	115
		40	9 12	8 54	8 37	8 23	10 8	9 55	9 42	9 31	154	142	116	97
		45	9 8	8 53	8 39	8 23	10 18	10 6	9 53	9 41	146	128	109	89
25	1212 Rumk. 6	30	12 11	11 57	11 41	11 23	13 25	13 16	13 4	12 49	159	164	167	163
		35	12 8	11 55	11 40	11 24	13 19	13 11	13 0	12 47	134	138	138	135
		40	12 9	11 56	11 42	11 28	13 10	13 3	12 53	12 40	114	115	114	107
		45	12 15	12 2	11 50	11 38	12 54	12 48	12 40	12 29	82	86	84	78
26	120 Tauri 6	30	14 55	14 41	14 27	14 12	15 20	15 24	15 22	15 17	81	99	109	118
		35	....	14 55	14 37	14 19	Star 1′	15″ N.	15 5	15 2	...	51	83	93
		40	....	....	....	....	....	....	....	....	...	...	...	...
		45	....	....	....	....	....	....	....	....	...	...	...	...
27	26 Geminor. 5½	30	16 8	16 6	16 7	*16 9	17 7	17 4	17 2	17 2	46	39	33	28
		35	16 12	16 11	16 12	16 14	17 14	17 10	17 7	17 6	36	30	24	18
		40	16 19	16 19	16 20	16 23	17 19	17 14	17 11	17 8	27	20	13	7
		45	16 25	16 25	16 29	16 33	17 23	17 17	17 12	17 9	16	9	3	357
28	λ Geminor, 3½	30	....	....	7 32	7 16	....	....	7 32	7 40	...	...	110	93
		35	7 31	7 20	7 14	7 11	7 47	7 51	7 54	7 54	106	89	79	73
		40	7 22	7 17	7 14	7 13	8 9	8 6	8 5	8 4	80	73	66	61
		45	7 23	7 19	7 17	7 16	8 22	8 17	8 14	8 13	67	61	56	51
29	B.A.C. 2872 6½	30	18 44	18 42	18 41	18 41	19 39	19 40	19 39	19 36	136	144	150	159
		35	18 37	18 35	18 31	18 3	19 32	19 34	19 33	19 31	121	128	134	141
		40	18 30	18 26	18 2	18 17	19 25	19 26	19 25	19 23	106	112	118	125
		45	18 24	18 21	18 16	18 9	19 16	19 17	19 17	19 14	93	98	104	110
30	B.A.C. 3122 6½	30	7 55	7 55	*7 57	....	8 56	8 53	8 52	*8 51	16	13	9	5
		35	8 0	8 0	*8 3	....	8 58	8 55	8 52	8 51	4	1	357	353
		40	8 8	8 14	8 12	....	8 58	8 54	8 51	8 48	352	348	344	336
		45	8 22	8 24	8 33	....	8 53	8 47	8 38	....	335	326	309	...
Feb. 11	ρ^1 Sagittarii 4	30	18 57	18 57	19 4	....	19 40	19 26	19 4	....	98	102	130	...
		35	18 55	18 53	*18 54	....	19 54	19 42	19 34	19 25	85	87	91	100
		40	18 57	18 54	*18 53	....	20 3	19 53	19 46	*19 40	78	78	81	85
		45	19 3	18 58	*18 57	....	20 12	20 2	19 56	*19 50	73	73	74	77
18	88 Piscium 6½	30	8 12	7 59	7 45	7 29	9 9	9 3	8 49	8 46	201	197	185	180
		35	8 5	7 56	7 44	7 29	9 10	9 5	8 57	8 48	174	170	166	159
		40	8 3	7 54	7 44	7 33	9 8	9 2	8 55	8 46	154	149	144	136
		45	8 3	7 56	7 48	7 39	9 2	8 57	8 50	8 40	127	127	121	111

* Below the horizon.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
Feb. 21	B.A.C. 1281 7	30	10 8	9 56	9 40	9 20	10 58	10 44	10 28	10 12	206	211	214	201
		35	9 56	9 43	9 27	9 9	11 2	10 51	10 38	10 23	178	181	179	171
		40	9 48	9 36	9 22	9 6	11 0	10 51	10 40	10 27	154	156	154	147
		45	9 44	9 33	9 21	9 7	10 55	10 47	10 37	10 26	132	131	129	122
24	λ Geminor. 3½	30	16 31	16 30	16 28	16 25	*17 11	17 22	17 24	17 24	97	117	124	132
		35	16 29	16 27	16 24	16 19	*17 2	17 13	17 16	17 17	79	99	108	117
		40	16 28	16 24	16 20	16 14	*16 50	17 2	17 5	17 7	57	80	89	98
		45	16 35	16 25	16 18	16 11	16 37	16 47	16 53	16 55	33	56	71	79
26	α Cancri 4	30	12 34	....	....	....	13 1	....	....	....	180	...	...	...
		35	12 10	12 2	11 58	....	13 11	12 47	12 8	....	148	140	133	...
		40	11 56	11 44	11 33	11 23	13 11	12 54	12 34	12 14	124	118	107	98
		45	11 48	11 36	11 24	11 14	13 8	12 54	12 39	12 33	103	99	91	84
28	35 Sext. *pr.* 6½	30	14 44	14 15	13 50	13 31	15 18	15 17	15 9	14 56	36	49	49	40
		35	....	14 26	13 55	13 34	....	14 52	14 53	14 44	...	9	21	19
		40	....	....	14 20	13 44	....	....	14 20	14 29	...	...	330	356
		45	....	....	....	14 3	....	....	Star	2′ N.	...	...	...	...
Mar. 1	79 Leonis 6	30	9 6	9 4	9 3	*9 4	10 14	10 7	10 2	10 0	25	27	28	29
		35	9 8	9 5	9 4	*9 5	10 16	10 10	10 6	10 4	13	15	16	17
		40	9 12	9 10	9 9	9 10	10 16	10 12	10 7	10 5	3	1	3	3
		45	9 22	9 18	9 17	9 17	10 13	10 10	10 6	10 4	349	351	349	350
22	B.A.C. 1930 6½	30	14 16	14 18	14 21	14 23	....	*15 5	15 6	15 4	...	164	174	187
		35	14 9	14 11	14 12	14 19	....	*15 2	15 3	15 3	...	147	157	166
		40	14 3	14 4	14 4	14 3	*14 54	14 57	14 59	14 59	123	132	141	146
		45	13 58	13 58	13 57	13 55	14 47	14 50	14 52	14 53	108	115	121	131
25	A¹ Cancri 6	30	11 22	11 16	10 20	....	12 19	11 56	10 20	....	175	182	177	...
		35	11 5	10 54	10 45	10 37	12 20	12 2	11 41	11 12	148	153	146	134
		40	10 55	10 43	10 30	10 18	12 14	12 1	11 45	11 26	125	128	122	113
		45	10 48	10 36	10 23	10 10	12 8	11 56	11 44	11 28	107	106	102	95
28	B.A.C. 3836 6	30	12 5	11 45	11 26	11 13	13 27	13 16	13 0	12 43	75	70	53	37
		35	12 5	11 45	11 26	11 12	13 12	13 4	12 52	12 38	46	45	33	27
		40	12 15	11 50	11 32	11 15	12 52	12 50	12 42	12 31	13	19	17	13
		45	12 24	12 6	11 44	11 20	12 24	12 21	12 25	12 20	331	335	352	355
Apr. 17	Lal. 8610 8	30	10 58	11 1	11 4	11 6	....	*11 44	11 44	11 41	...	172	188	199
		35	10 52	10 54	10 55	10 56	....	*11 43	11 44	11 43	...	160	167	175
		40	10 47	10 48	10 48	10 47	*11 37	11 39	11 41	11 41	136	143	150	159
		45	10 43	10 43	10 42	10 39	*11 30	11 34	11 35	11 35	117	125	130	138
17	Lal. 8613 8	30	10 58	10 59	10 59	10 58	....	*11 49	11 51	11 53	...	139	146	156
		35	10 57	10 57	10 55	10 53	....	*11 43	11 46	11 47	...	118	126	134
		40	10 57	10 56	10 53	10 49	*11 29	11 34	11 38	11 40	87	95	108	116
		45	11 1	11 57	10 53	10 49	11 14	11 24	11 27	11 30	57	77	85	93
20	68 Geminor. 5½	30	10 53	10 50	10 48	10 59	11 48	11 40	11 26	10 59	171	181	197	224
		35	10 42	10 37	10 31	10 25	11 44	11 38	11 29	11 18	151	161	171	178
		40	10 33	10 26	10 19	10 10	11 38	11 33	11 25	11 15	134	141	145	155
		45	10 25	10 17	10 9	9 59	11 30	11 26	11 20	11 9	120	124	130	135
21	B.A.C. 2872 6½	30	13 26	13 24	13 20	13 14	14 18	14 19	14 20	14 20	108	116	123	132
		35	13 22	13 19	13 14	13 7	14 8	14 10	14 12	14 11	91	98	108	115
		40	13 20	13 15	13 8	13 1	13 56	13 59	14 1	14 0	72	82	90	97
		45	13 20	13 12	13 5	12 56	13 41	13 45	13 48	13 48	50	61	72	79
May 26	μ Libræ 6	30	17 8	17 4	16 57	16 48	....	*18 10	18 7	18 4	...	139	134	142
		35	17 1	16 58	16 51	16 42	....	*18 3	18 0	17 55	...	124	117	111
		40	16 55	16 52	16 46	16 38	....	*17 54	17 49	17 44	...	107	99	93
		45	16 50	16 47	16 43	16 34	....	*17 42	17 37	17 31	...	87	81	76

* Below the horizon.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
May 28	χ Ophiuchi 6	30	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	Star	Star	. . .	Star
		35	17 24	17 8	17 0	16 40	17 24	17 8	17 0	16 40	1's.	30's.	190	30"s.
		40	16 57	16 40	16 26	16 12	17 34	17 26	17 14	16 57	185	171	165	157
		45	16 40	16 28	16 15	16 1	17 37	17 28	17 17	17 4	163	154	147	140
June 4	ϱ Aquarii 5½	30	. . . .	. . . .	. . . .	. . . .	13 56	13 52	*13 51	. . . .	46	47	48	. . .
		35	. . . .	. . . .	. . . .	. . . .	14 1	13 59	*13 57	. . . .	49	49	50	. . .
		40	. . . .	. . . .	. . . .	. . . .	14 6	14 4	*14 3	. . . .	33	34	36	. . .
		45	. . . .	. . . .	. . . .	. . . .	14 10	*14 9	. . . .	. . . .	26	28	. . .	. . .
5	B.A.C. 8094 6	30	14 54	14 51	14 49	*14 49	15 57	15 51	15 46	15 43	76	71	67	65
		35	15 0	14 56	14 54	*14 54	16 6	15 59	15 54	15 51	70	65	60	58
		40	15 8	15 4	15 2	*15 1	16 15	16 8	16 3	15 59	65	60	56	54
		45	15 16	15 13	15 11	*15 10	16 22	16 15	16 10	16 7	62	56	52	50
7	73 Piscium 6½	30	16 20	16 19	16 19	*16 20	17 21	17 16	17 12	17 10	44	36	31	27
		35	16 29	16 28	16 28	*16 29	17 27	17 21	17 17	17 14	38	30	24	19
		40	16 39	16 38	16 38	*16 40	17 32	17 26	17 21	17 18	32	24	18	13
		45	16 51	16 50	16 51	16 52	17 37	17 30	17 24	17 20	27	18	10	3
18	76 Leonis 6	30	11 6	11 1	10 57	10 52	12 3	11 59	11 51	11 39	159	160	164	170
		35	10 55	10 49	10 42	10 38	11 58	11 53	13 47	11 37	140	144	145	152
		40	10 44	10 38	10 31	10 22	11 51	11 47	11 41	11 32	125	128	130	132
		45	10 35	10 29	10 21	10 11	11 42	11 39	11 33	11 25	112	114	116	117
18	79 Leonis 6	30	. . . .	*13 40	13 40	13 38	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .
		35	*13 34	13 35	13 34	13 32	. . . .	. . . .	*14 24	14 26	. . .	. . .	95	98
		40	*13 31	13 31	13 30	13 27	. . . .	. . . .	*14 14	14 14	. . .	. . .	79	80
		45	*13 28	13 28	13 27	13 23	. . . .	*14 0	14 1	14 2	. . .	61	62	65
23	υ¹ Libræ 6	30	15 24	15 19	15 11	15 0	*16 28	16 25	16 20	16 12	132	123	116	105
		35	15 20	15 16	15 10	14 59	*16 19	16 14	16 8	15 59	112	102	93	85
		40	15 18	15 15	15 10	15 2	*16 7	16 2	15 54	15 43	91	82	73	62
		45	15 18	15 17	15 16	15 17	15 52	15 44	15 31	15 17	67	56	40	25
25	29 Ophiuchi 6	30	16 26	16 16	16 2	15 48	17 20	17 19	17 16	17 9	189	177	166	154
		35	16 15	16 7	15 56	15 41	*17 19	17 17	17 12	17 4	165	155	146	137
		40	16 8	15 0	15 49	15 38	*17 15	17 12	17 6	16 58	149	139	128	118
		45	16 1	15 55	15 45	15 34	*17 9	17 5	16 58	16 50	130	121	112	103
July 8	Lal. 8852 9½	30	17 31	17 32	17 35	17 39	18 29	18 24	18 21	18 19	26	17	10	3
		35	17 40	17 41	17 44	17 49	18 32	18 27	18 22	18 19	16	8	359	351
		40	17 50	17 53	17 58	18 8	18 35	18 29	18 21	18 8	7	359	345	316
		45	18 5	18 11	. . . .	. . . .	18 35	18 25	. . . .	. . . .	355	340	. . .	. . .
21	θ Libræ 4½	30	14 52	14 50	14 46	14 39	. . . .	. . . .	*15 51	15 48	. . .	. . .	131	124
		35	*14 47	14 45	14 42	14 36	. . . .	. . . .	*15 42	15 37	. . .	. . .	111	102
		40	*14 43	14 42	14 40	14 37	. . . .	. . . .	*15 31	15 24	. . .	. . .	92	81
		45	. . . .	*14 41	14 41	14 40	. . . .	. . . .	*15 14	15 5	. . .	. . .	66	54
24	B.A.C. 6287 6	30	*17 8	17 4	16 59	16 52	. . . .	. . . .	*18 3	18 1	. . .	. . .	165	155
		35	*17 1	16 59	16 54	16 49	. . . .	. . . .	*17 59	17 56	. . .	. . .	145	134
		40	*16 57	16 55	16 52	16 48	. . . .	. . . .	*17 53	17 48	. . .	. . .	125	114
		45	. . . .	*16 52	16 51	16 50	. . . .	. . . .	*17 42	17 36	. . .	. . .	102	92
25	ϱ¹ Sagittarii 4	30	17 0	16 41	16 25	16 9	17 13	17 22	17 23	17 19	339	212	194	179
		35	16 40	16 29	16 17	16 2	17 27	17 27	17 25	17 20	199	189	175	159
		40	16 30	16 22	16 11	16 0	17 28	17 27	17 24	17 18	178	167	157	143
		45	16 22	16 16	16 7	15 57	17 27	17 24	17 20	17 13	158	148	139	127
27	9 Aquarii 6	30	12 22	12 7	11 52	11 44	13 51	13 34	13 16	13 4	116	95	77	68
		35	12 28	12 13	12 1	11 50	13 55	13 38	13 21	13 6	106	86	70	59
		40	12 34	12 20	12 8	12 0	13 57	13 40	13 25	13 11	96	78	64	53
		45	12 41	12 29	12 19	12 10	13 57	13 42	13 28	13 15	85	71	58	48

* Below the horizon.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
July 28	B.A.C. 7620 6	30	12 25	12 11	12 1	11 54	13 26	13 14	13 2	12 51	129	112	99	91
		35	12 26	12 15	12 4	11 58	13 37	13 24	13 13	13 3	120	105	93	84
		40	12 30	12 19	12 10	12 3	13 45	13 33	13 22	13 12	114	100	88	80
		45	12 36	12 25	12 17	12 10	13 52	14 41	13 30	13 20	106	95	84	77
Aug. 1	96 Piscium 6½	30	15 25	15 21	15 20	15 24	16 33	16 15	15 58	15 40	42	20	359	337
		35	15 41	15 40	....	....	16 33	16 12	....	....	31	15	...	...
		40	16 1	....	....	....	16 28	....	....	....	14	...	...	...
		45	....	....	....	....	....	....	....	....	...	...	...	...
2	B.A.C. 728 6½	30	14 10	10 9	10 10	14 12	15 9	15 2	14 57	14 54	31	21	14	8
		35	14 13	14 12	14 14	14 16	15 14	15 5	14 59	14 54	25	12	3	356
		40	14 32	14 33	14 35	14 44	15 17	15 7	14 59	14 51	17	3	351	338
		45	14 48	14 53	....	....	15 18	15 2	....	....	5	341	...	...
2	ξ Arietis 5½	30	....	....	15 32	15 16	....	....	15 32	15 39	...	...	Star 45"s.	157
		35	....	15 34	15 22	15 15	....	15 52	15 55	15 56	...	130	114	100
		40	15 43	15 31	15 23	15 19	16 12	16 12	16 10	16 9	134	115	103	92
		45	15 43	15 34	15 28	15 25	16 29	16 26	16 23	16 20	123	108	96	87
4	55 Tauri 7	30	15 11	15 12	15 15	15 20	16 6	16 2	15 59	15 58	20	14	7	0
		35	15 20	15 23	15 27	15 33	16 9	16 4	16 0	15 57	11	3	355	346
		40	15 32	15 35	15 43	15 52	16 11	16 4	15 56	15 52	1	351	338	Star
		45	15 48	16 0	....	....	16 8	16 0	....	....	346	Star 1'15" N.	...	1' N.
4	B.A.C. 1351 6½	30	16 39	16 38	16 40	16 44	17 53	17 44	17 37	17 32	45	35	25	17
		35	16 49	16 48	16 49	16 52	17 59	17 49	17 41	17 34	37	26	16	7
		40	17 2	17 0	16 59	17 2	18 3	17 52	17 43	17 35	30	17	6	355
		45	17 14	17 13	17 14	17 23	18 5	17 54	17 43	17 27	21	8	354	328
23	τ^2 Capricor. 5	30	....	....	....	....	....	....	....	....	Star	...	...	...
		35	11 24	10 52	10 35	10 23	11 24	11 21	11 12	11 0	20"s.	157	143	128
		40	11 3	10 45	10 32	10 20	11 50	11 39	11 28	11 15	162	146	130	120
		45	10 59	10 44	10 32	10 23	12 0	11 49	11 38	11 26	150	135	123	113
27	44 Piscium 6	30	....	....	....	19 1	....	....	....	19 1	Star	...	...	250
		35	19 30	19 11	18 53	18 35	19 30	19 35	19 34	19 29	15"s.	232	218	203
		40	19 5	18 56	18 43	18 29	19 51	19 47	19 42	19 36	203	197	188	179
		45	18 56	18 48	18 38	18 26	19 54	19 50	19 45	19 38	178	173	165	157
28	77 Pisci. *pr.* 7	30	10 17	*10 17	....	....	11 12	11 10	11 90	*11 10	75	69	67	65
		35	10 22	10 22	*10 23	....	11 21	11 19	11 18	*11 18	67	63	61	59
		40	10 29	10 29	*10 30	....	11 30	11 27	11 26	11 26	63	59	56	54
		45	10 38	10 38	*10 39	....	11 38	11 35	11 33	11 33	61	56	52	50
31	Lal. 7753 7½	30	....	18 8	17 35	17 17	....	18 8	18 13	18 8	Star	45"s.	115	93
		35	18 9	17 48	17 30	17 17	18 50	18 41	18 32	18 22	163	131	105	85
		40	18 1	17 45	17 32	17 22	*19 8	18 55	18 43	18 32	145	118	97	79
		45	18 1	17 47	17 37	17 28	19 15	19 3	18 51	18 40	129	109	89	73
Sep. 2	B.A.C. 1930 6½	30	14 22	*14 22	....	....	15 13	15 14	15 15	*15 17	59	51	44	40
		35	14 25	14 27	*14 29	....	15 21	15 20	15 21	15 22	47	41	35	31
		40	14 31	14 32	14 36	*14 39	15 28	15 26	15 25	15 26	39	32	27	23
		45	14 38	14 40	14 43	*14 47	15 34	15 31	15 29	15 29	32	28	20	15
29	130 Tauri 6	30	13 36	13 33	13 33	13 34	14 37	14 33	14 30	14 28	48	41	33	27
		35	13 41	13 39	13 39	13 41	14 45	14 39	14 35	14 32	40	32	25	18
		40	13 48	13 47	13 48	13 50	14 50	14 44	14 39	14 35	31	23	15	9
		45	13 58	13 57	13 58	14 1	14 55	14 48	14 42	14 37	23	14	7	359
Oct. 21	44 Piscium 6	30	14 24	13 56	13 32	13 11	14 34	14 37	14 31	14 22	Star 0"s.	218	197	173
		35	14 2	13 44	13 29	13 11	14 53	14 48	14 40	14 29	203	191	175	155
		40	13 55	13 42	13 29	13 15	15 0	14 53	14 44	14 32	180	169	155	137
		45	13 53	13 42	13 31	13 20	15 1	14 54	14 45	14 33	158	148	135	119

* Below the horizon.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
Oct. 22	96 Piscium 6½	30	17 48	17 44	17 37	17 29	18 44	18 43	18 41	18 36	160	162	166	164
		35	17 48	17 43	17 38	17 30	18 40	18 39	18 36	18 32	138	141	142	141
		40	17 49	17 45	17 40	17 34	18 31	18 31	18 28	18 23	112	117	116	116
		45	17 57	17 53	17 49	17 45	18 16	18 15	18 12	18 6	80	83	82	79
23	B.A.C. 728 6½	30	14 34	14 16	14 0	13 46	15 49	15 35	15 21	15 5	182	167	144	110
		35	14 34	14 19	14 6	13 56	15 51	15 38	15 23	15 8	159	145	121	198
		40	14 37	14 24	14 14	14 15	15 49	15 36	15 22	15 5	134	120	99	73
		45	14 43	14 33	14 26	14 21	15 44	15 31	15 20	14 59	110	96	82	50
24	B.A.C. 987 6½	30	. . . .	8 42	*8 35	. . . .	. . . .	8 42	*8 50	. . . .	. . .	Star 30′s.	121	. . .
		35	8 36	8 33	*8 32	. . . .	8 57	9 2	9 5	*9 8	119	107	100	96
		40	8 36	8 34	*8 35	. . . .	9 12	9 14	9 16	9 18	104	96	91	88
		45	8 39	8 38	8 39	*8 41	9 24	9 25	9 26	9 27	97	89	85	83
25	Rumk. 1136 6	30	9 54	9 54	9 57	*10 0	10 50	10 47	10 44	10 43	32	25	17	11
		35	10 2	10 2	10 5	*10 9	10 55	10 50	10 47	10 45	23	16	9	2
		40	10 12	10 13	10 17	10 22	10 59	10 53	10 48	10 44	18	7	357	348
		45	10 23	10 27	10 32	10 40	11 1	10 53	10 44	10 40	7	354	337	Star 1′ N.
25	Lal. 8610 8	30	19 20	19 19	19 7	18 54	20 30	20 27	20 20	20 10	144	150	156	160
		35	19 27	19 18	19 6	18 53	20 22	20 19	20 14	20 6	120	127	135	138
		40	19 29	19 19	19 8	18 56	20 12	20 10	20 4	19 57	97	106	108	111
		45	19 44	19 28	19 15	19 3	19 44	19 52	19 48	19 42	Star 15′N.	72	74	78
26	111 Tauri 6	30	. . . .	. . . .	12 14	12 4	. . . .	. . . .	12 25	12 33	Star	. . .	115	95
		35	12 32	12 14	12 6	12 3	12 32	12 43	12 45	12 46	0′ s.	103	90	79
		40	12 21	12 13	12 8	12 5	13 0	12 59	12 57	12 56	99	86	78	70
		45	12 22	12 16	12 12	12 10	13 15	13 10	13 7	13 5	87	78	70	63
29	29 Cancri 6	30	14 37	14 32	14 30	14 30	15 44	15 36	15 31	15 28	35	31	27	23
		35	14 40	14 36	14 34	14 35	15 48	15 41	15 35	15 31	24	20	16	12
		40	14 46	14 43	14 42	14 43	15 51	15 43	15 37	15 32	13	9	5	0
		45	14 56	14 53	14 53	14 55	15 51	15 42	15 36	15 31	1	356	351	346
Nov. 22	B.A.C. 1526 6	30	. . . .	. . . .	. . . .	12 48	. . . .	. . . .	. . . .	12 48	. . .	Star	Star . . .	1′45″ s.
		35	. . . .	13 18	13 0	12 36	. . . .	13 18	13 8	13 11	. . .	2′ s.	133	108
		40	13 21	13 2	12 46	12 33	13 52	13 43	13 36	13 28	156	132	110	94
		45	13 11	12 58	12 46	12 36	14 10	13 58	13 49	13 40	137	117	100	87
27	B.A.C. 3398 6	30	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .
		35	13 6	13 0	*12 58	. . . .	13 20	13 24	13 28	*13 32	99	88	81	75
		40	12 56	12 54	*12 54	. . . .	13 38	13 38	13 40	*13 42	71	66	62	58
		45	12 55	*12 54	*12 55	. . . .	13 49	13 48	13 48	13 49	54	52	49	47
Dec. 17	B.A.C. 728 6½	30	12 54	12 42	12 29	12 15	14 3	13 56	13 45	13 31	156	155	150	140
		35	12 58	12 48	12 36	12 26	13 57	13 49	13 38	13 23	129	126	120	109
		40	13 5	12 57	12 49	12 44	13 46	13 36	13 24	13 7	103	97	87	70
		45	13 22	. . . .	. . . .	. . . .	13 22	. . . .	. . . .	. . . .	Star 1′30″ N.	. . .	. . .	. . .
17	ξ Arietis 5½	30	14 36	. . . .	. . . .	. . . .	14 36	. . . .	. . . .	. . . .	Star	2′ s.	. . .	. . .
		35	14 20	14 12	14 2	13 48	14 51	14 44	14 36	14 28	218	221	222	217
		40	14 5	13 57	13 48	13 35	14 56	14 52	14 45	14 37	189	190	189	187
		45	13 57	13 50	13 41	13 31	14 56	14 52	14 46	14 40	164	166	164	162
19	Rumk. 1136 6	30	8 31	8 22	8 17	8 14	9 36	9 27	9 19	9 13	70	57	46	37
		35	8 35	8 28	8 24	8 22	9 44	9 34	9 25	9 18	65	51	40	30
		40	8 42	8 37	8 33	8 32	9 51	9 40	9 31	9 23	60	45	33	22
		45	8 51	8 47	8 44	8 43	9 55	9 45	9 35	9 26	51	38	26	15
19	55 Tauri 7	30	10 9	9 57	9 48	9 42	11 29	11 13	10 58	10 45	89	55	35	21
		35	10 15	10 4	9 57	9 55	11 31	11 16	11 1	10 45	78	50	29	10
		40	10 24	10 16	10 11	10 9	11 30	11 15	10 59	10 42	63	40	18	356
		45	10 37	10 32	10 33	10 36	11 26	11 10	10 49	10 36	45	22	353	1′ N

* Below the horizon.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
		°	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°
Dec. 19	63 Tauri 6	30	12 16	12 0	11 45	11 33	13 36	13 20	13 3	12 44	144	130	94	46
		35	12 22	12 7	11 55	11 46	13 30	13 14	12 57	12 39	113	95	65	30
		40	12 34	12 21	12 13	12 14	13 19	13 4	12 45	12 14	81	65	32	Star
		45	12 52	....	....	....	12 52	....	....	....	Star 2' N.	...	...	0' N.
19	B.A.C. 1351 6½	30	12 15	11 57	11 40	11 26	13 33	13 17	13 1	12 46	172	156	124	80
		35	12 14	11 58	11 44	11 32	13 34	13 19	13 3	12 48	147	132	102	70
		40	12 16	12 3	11 51	11 41	13 31	13 17	13 3	12 48	120	105	83	59
		45	12 24	12 13	12 3	11 55	13 24	13 11	12 58	12 43	93	78	59	39
20	115 Tauri 5½	30	11 44	11 29	11 15	11 5	13 2	12 45	12 29	12 16	130	80	55	40
		35	11 44	11 31	11 20	11 11	13 4	12 48	12 33	12 20	107	72	48	33
		40	11 49	11 37	11 28	11 21	13 4	12 49	12 35	12 21	87	62	42	24
		45	11 57	11 47	11 39	11 34	13 0	12 47	12 33	12 19	67	48	29	12
21	26 Geminor. 5½	30	17 29	17 23	17 16	17 10	18 24	18 15	18 2	17 44	176	186	196	208
		35	17 19	17 11	17 2	16 52	18 21	18 14	18 4	17 51	155	162	170	175
		40	17 12	17 3	16 54	16 42	18 15	18 10	18 2	17 52	135	142	147	150
		45	17 6	16 58	16 47	16 37	18 8	18 3	17 57	17 48	116	121	145	148

THE

AMERICAN NAUTICAL ALMANAC

MAY BE OBTAINED OF

GEORGE W. BLUNT, New York,

GENERAL AGENT FOR THE UNITED STATES,

AND ALSO OF

Bath, Me.
ZINA HYDE & CO.,
HOWLAND AND DONNELL.

Portland, Me.
LOWELL AND SENTER,
E. P. BANKS.

Portsmouth, N. H.
J. H. FOSTER.

Salem, Mass.
GEORGE CREAMER,
IVES AND SMITH,
H. WHIPPLE AND SON.

Cambridge, Mass.
SEVER AND FRANCIS.

Boston, Mass.
S. THAXTER AND SON,
BOND AND SONS,
F. W. LINCOLN, Jr. & CO.

New Bedford, Mass.
C. TABER & CO.,
JOHN KEHEW.

Nantucket, Mass.
THOMAS A. GARDNER.

Providence, R. I.
WILLIAM EARLE,
A. H. STILLWELL,
CROWELL AND RICH,
CLEAVELAND AND PURINTON.

Newport, R. I.
GEORGE BOWEN & CO.,
T. & J. COGGESHALL.

New London, Conn.
GORDON AND BACON,
BOLLES & CO.

New Haven, Conn.
H. L. CANNON,
SIDNEY BABCOCK.

Sag Harbor, L. I.
GEORGE W. TABOR.

New York.
MICHAEL RUPP,
JOHN OAKES,
D. EGGERT AND SON.

Philadelphia.
PARRY AND McMILLAN,
C. F. HELFFRICHT,
W. H. C. RIGGS.

Baltimore.
CUSHINGS AND BAILEY,
PETER WALTHER,
A. STOWELL, Jr.

Norfolk, Va.
C. HALL & CO.,
VICKERY & CO.,
W. P. GRIFFITH.

Wilmington, N. C.
J. H. NEFF,
W. K. COVELL.

Charleston, S. C.
H. E. VINCENT,
C. H. WEST AND SON,
EDWARD CANDLER,
JOHN RUSSELL.

Savannah.
CLAGHORN AND CUNNINGHAM,
ROBERT HARDIE & CO.

Mobile.
C. BREWER,
DESHON AND MYERS,
L. MERCHANT & CO.,
S. H. GOETZEL & CO.

New Orleans.
L. FRIGERIO, Jr.,
ALEX. LEVY & CO.,
RILEY AND STEVENS.

Washington, D. C.
TAYLOR AND MAURY.

Alexandria, Va.
ROBERT BELL.

Pensacola, Fa.
KNOWLES AND WILKINS.

Halifax, N. S.
E. G. FULLER,
JAMES DONOHOE.

San Francisco, Cal.
THOMAS TENNENT,
H. H. BANCROFT & CO.

London.
J. D. POTTER.